

# ARE ALL LEGAL PROBABILITIES CREATED EQUAL?

YUVAL FELDMAN<sup>†</sup> & DORON TEICHMAN<sup>‡</sup>

*At the core of the economic analysis of law lies the concept of expected sanctions, which are calculated by multiplying the severity of the sanction that is applied to wrongdoers by the probability that it will be applied. This probability is the product of several sequential probabilities involving the different actors responsible for sanctioning wrongdoers (e.g., police, prosecutors, judges, jurors, etc.). Generally, legal economists treat different legal probabilities as fungible, simply multiplying them much like any other sequential probabilistic situation. This Article challenges this assumption, demonstrating that people perceive and are affected by different types of legal probabilities in distinct ways. More specifically, it shows that uncertainty associated with the substance of the law and uncertainty associated with imperfect enforcement should not be treated equivalently.*

*To demonstrate this point, this Article presents a series of between-subjects experimental surveys that measure and compare participants' attitudes toward compliance in conditions of uncertainty. Study participants—several hundred students from Israel and the United States—answered questions in the context of one of several variations on the same hypothetical scenario. While the expected sanction was the same in each variation, the source of uncertainty differed. These studies confirmed that people are less likely to comply when uncertainty stems from the imprecision of law's substance than when uncertainty stems from the imperfect enforcement of clear law.*

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<sup>†</sup> Senior Lecturer, Faculty of Law, Bar-Ilan University.

<sup>‡</sup> The Joseph H. and Belle R. Braun Senior Lectureship in Law, Faculty of Law, Hebrew University of Jerusalem. For their helpful comments we thank Adi Eyal, Tsilli Dagan, Alon Harel, Shachar Lifshitz, Richard McAdams, Jacob Nussim, Jeff Rachlinski, Avishalom Tor, participants at the conference on empirical legal studies at the Hebrew University of Jerusalem, and workshop participants at the University of Illinois College of Law and Tel Aviv University. For statistical consulting we thank Tammy Shterenhal. This research was supported by a grant from the G.I.F., the German-Israeli Foundation for Scientific Research and Development, and by the British Friends of the Hebrew University. The data used for this study and the accompanying codebooks are available online through the *New York University Law Review's* data repository. See Yuval Feldman & Doron Teichman, *Are All Legal Probabilities Created Equal?*, *NYU LAW REVIEW DATAVERSE* (Feb. 24, 2009), <http://hdl.handle.net/1902.1/12386>. Copyright © 2009 by Yuval Feldman & Doron Teichman.

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## INTRODUCTION

Imagine you are offered to play a game at a casino for the cost of one dollar. According to the rules of the game, you will throw a die and flip a coin after first predicting what the result of each action will be. If you guess both results correctly, you will win ten dollars. Like a good, rational player, you calculate the odds of winning the game, multiplying the probability of the die landing on your guess (1/6) by the probability of your guessing the coin toss correctly (1/2). You then reach the conclusion that there is a one in twelve chance of winning the game. Turning to cost-benefit analysis, you realize that the expected benefit from the game ( $1/12 \times \$10$ ) is smaller than its cost (\$1) and therefore decline the offer to play.

This hypothetical illustrates how legal economists treat the decisions of potential wrongdoers. Within an economic framework, the law sets, in the form of legal payments, prices for different activities (e.g., fines, damages, etc.). Potential wrongdoers weigh the costs the legal system would impose on them against the benefits that would be gained by engaging in the activity and decide to engage in an activity only if it would create a net benefit for them.

One of the central insights of traditional deterrence theory is that legal payments are, in many cases, probabilistic. The initial formalization of the theory was introduced by Gary S. Becker in his seminal essay on crime control.<sup>1</sup> As Becker pointed out, what potential criminals face *ex ante* is the *expected* sanction, not just the sanction that is actually imposed on a small subset of them.<sup>2</sup> Policymakers designing an optimal deterrence regime must therefore pay attention to the combination of actual sanctions and the probability of their imposition.<sup>3</sup> Ever since Becker identified the importance of probabilities with respect to policy design, an abundance of legal literature has explored the validity of his model's positive assumptions and the desirability of its policy implications.<sup>4</sup> For example, many have criticized the Becker model for treating changes in the severity of the sanction and in the probability of detection as identical, arguing that potential criminals are more sensitive to changes in the probability of detection than to changes in sanction size.<sup>5</sup> Others have endorsed the Becker model and have urged the incorporation of its insights into procedural and substantive aspects of private law.<sup>6</sup>

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<sup>1</sup> See Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. POL. ECON. 169, 176–79 (1968) (presenting probability of conviction, length of punishment, and other variables as determinants of number of criminal offenses).

<sup>2</sup> See *id.*

<sup>3</sup> See *id.* at 179–85 (arguing that optimal policies depend on probability of crime's detection and enforcement, sanction size, and form of punishment—e.g., imprisonment, probation, fine, etc.).

<sup>4</sup> We focus on positive critiques of the Becker model, as those are of relevance to this empirical project. For a normative critique of the model, see Paul H. Robinson & John M. Darley, *The Role of Deterrence in the Formulation of Criminal Law Rules: At Its Worst When Doing Its Best*, 91 GEO. L.J. 949, 974–89 (2003), which argues that sanctions should be distributed along the lines of just desert rather than deterrence theory.

<sup>5</sup> See, e.g., Harold G. Grasmick & George J. Bryjak, *The Deterrent Effect of Perceived Severity of Punishment*, 59 SOC. FORCES 471 (1980) (reviewing and analyzing literature on relationship between perceived severity and perceived certainty of punishment, suggesting that perceived severity has significant deterring effect at relatively high levels of perceived certainty). To be sure, Becker did acknowledge the possibility that potential criminals are more sensitive to changes in the probability of detection than to changes in the severity of sanctions as a result of their attitude toward risk. See Becker, *supra* note 1, at 178. Nonetheless, one of the central findings of the Becker model is that *if* criminals are risk neutral, then policymakers can treat the level of the sanctions and the probability of detection as equal, and should adopt a regime that is based on low probabilities of detection and high sanctions. *Id.* at 183–84.

<sup>6</sup> See, e.g., A. Mitchell Polinsky & Steven Shavell, *Punitive Damages: An Economic Analysis*, 111 HARV. L. REV. 869, 887–96 (1998) (calculating size of punitive-damages multiplier by taking legal probabilities into account); David Rosenberg & Steven Shavell, *A Simple Proposal To Halve Litigation Costs*, 91 VA. L. REV. 1721, 1721–25 (2005) (recommending that courts double damage awards while randomly blocking half of cases in order to sustain deterrence and reduce litigation costs).

One should note, however, that the probability of sanction imposition is not determined by a single event. Rather, it is determined by a series of sequential events (such as being caught by the police, being charged by a prosecutor, and being convicted by a court in accordance with the various procedural rules of the legal system). From an economic perspective, this detail is a minor complexity and can be resolved by the tools of expected utility theory.<sup>7</sup> Thus, much like the casino player who is determining whether to play the die-roll-and-coin-toss game, potential wrongdoers are assumed to treat different types of legal probabilities as equal, simply multiplying them in order to derive the probability of being sanctioned.

Economists are not the only ones to have explored the ways individuals deal with probabilities generally and legal probabilities specifically. Cognitive psychologists have closely studied different aspects of decisionmaking under conditions of uncertainty and have demonstrated that people diverge systematically from the predictions generated by expected utility theory.<sup>8</sup> Building on these contributions, legal scholars from the behavioral law and economics movement have developed theories regarding decisionmaking in uncertain legal situations.<sup>9</sup> These studies challenge the assumptions of traditional law and economics scholars by presenting new predictions as to how the law actually affects behavior in areas including law enforcement, civil litigation, consumer contracts, and damage regimes.<sup>10</sup>

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<sup>7</sup> Expected utility theory uses a utility function to represent a decisionmaker's preferences and is the standard theory through which economists model decisionmaking in situations of uncertainty. See ANDREU MAS-COLELL ET AL., MICROECONOMIC THEORY 168–83 (1995) (reviewing basic concepts of expected utility theory).

<sup>8</sup> The leading early example of a behavioral decision theory model of choice is Kahneman and Tversky's prospect theory. See generally Daniel Kahneman & Amos Tversky, *Prospect Theory: An Analysis of Decision Under Risk*, 47 *ECONOMETRICA* 263 (1979) (demonstrating importance of framing and perception in people's risk estimates and arguing that people overweight definite outcomes as compared to probable outcomes, even if those definite outcomes will lead to sure losses). For a collection of later articles suggesting a new paradigm of decisionmaking that takes into account some basic biases and heuristics in perception and reasoning, see *JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES* (Daniel Kahneman et al. eds., 1982).

<sup>9</sup> For an influential collection of articles, see *BEHAVIORAL LAW AND ECONOMICS* (Cass R. Sunstein ed., 2000), which presents studies that incorporate the insights of cognitive psychology into the law and economics literature.

<sup>10</sup> See generally Linda Babcock & Greg Pogarsky, *Damage Caps and Settlement: A Behavioral Approach*, 28 *J. LEGAL STUD.* 341 (1999) (settlement negotiations); Oren Bar-Gill, *The Behavioral Economics of Consumer Contracts*, 92 *MINN. L. REV.* 749 (2008) (consumer contracts); Ehud Guttel & Alon Harel, *Matching Probabilities: The Behavioral Law and Economics of Repeated Behavior*, 72 *U. CHI. L. REV.* 1197 (2005) (law enforcement); Ehud Guttel & Alon Harel, *Uncertainty Revisited: Legal Prediction and Legal Postdiction*, 107 *MICH. L. REV.* 467 (2008) [hereinafter Guttel & Harel, *Uncertainty Revisited*] (law enforcement); Robert A. Hillman, *The Limits of Behavioral Decision Theory in Legal*

Yet as a general matter these studies have ignored the constitutive role of law in people's decisions. For instance, after cognitive psychologists taught us that individuals treat risks associated with gains and risks associated with losses differently,<sup>11</sup> this insight was applied to legal situations that involve both gains and losses in order to adjust the predictions of economic models in those situations.<sup>12</sup> Thus, according to these studies, it is not the content of law itself that affects people's behavior, but rather the match between the setting created by the law and the preexisting behavioral bias that triggers divergence from the rational choice model.

In a recent study, we explored the possibility that the way the law labels payments affects both the way people perceive a given situation and the way in which people are expected to behave.<sup>13</sup> We demonstrated that payments of equal size that the law structures differently with respect to the timing of the payments (before or after the wrongful act) and the identity of the payment recipients (the state or the victim) have different effects on behavior.<sup>14</sup> More specifically, our results showed that legal payments function as a continuum with respect to their effects on incentives.<sup>15</sup> At one end of this continuum lie *ex ante* payments made to individuals. These payments are close in structure to a price and are therefore perceived by people as legitimate.<sup>16</sup> At the other end of the continuum lie *ex post* payments made to the state. These payments are close in structure to the paradigmatic punishment and are therefore perceived as less legitimate.<sup>17</sup>

In light of our finding that different types of legal payments generate distinct incentives, we turn in this study to examine whether different types of legal probabilities also generate distinct incentives. More specifically, we wish to compare two sources of uncertainty regularly created by the legal system. The first is legal uncertainty.<sup>18</sup>

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*Analysis: The Case of Liquidated Damages*, 85 CORNELL L. REV. 717 (2000) (contract damages); Jeffrey J. Rachlinski, *Gains, Losses, and the Psychology of Litigation*, 70 S. CAL. L. REV. 113 (1996) (litigation).

<sup>11</sup> See, e.g., Kahneman & Tversky, *supra* note 8, at 279 (arguing that people are risk lovers with regard to losses but risk averse with respect to gains).

<sup>12</sup> See Rachlinski, *supra* note 10, at 128–30 (illustrating difference between plaintiffs' decisions that are seen as gains and defendants' decisions that are seen as losses).

<sup>13</sup> Yuval Feldman & Doron Teichman, *Are All "Legal Dollars" Created Equal?*, 102 NW. U. L. REV. 223 (2008).

<sup>14</sup> *Id.* at 235–47.

<sup>15</sup> *Id.* at 250.

<sup>16</sup> *Id.* at 248–49, 256–57.

<sup>17</sup> *Id.* at 248–49.

<sup>18</sup> In the legal literature, the accepted term for legal uncertainty is "ambiguity." We intentionally choose not to use this terminology because the cognitive psychology literature makes a distinction between *uncertain* situations, in which decisionmakers are aware of the probabilities of different contingencies, and *ambiguous* situations, in which deci-

Legal rules are inherently uncertain. This uncertainty can be a result of the limitations of language or a result of ambiguous legal terms such as “reasonable” and “good faith”—terms that depend on a probabilistic ex post determination of an adjudicator. The second is enforcement uncertainty. Legal liability tends to be probabilistic as a result of difficulties associated with detecting wrongdoers and with assigning legal liability to them in accordance with different legal procedural rules.

From the perspective of rational choice theory, the difference between legal uncertainty and enforcement uncertainty is much like the difference between throwing a die and flipping a coin in our initial example: There simply is no difference.<sup>19</sup> The expected sanction if illegality is certain and the probability of detection is fifty percent is identical to the expected sanction if detection is certain and the probability of illegality is fifty percent. We, on the other hand, argue that from the perspective of decisionmakers, legal probabilities, like legal payments, are not fungible. External forces, such as social norms and the expressive power of the law, combine with internal aspects of human reasoning to lead people to perceive different types of legal probability differently. More specifically, we hypothesize that whereas uncertainty stemming from the content of the law allows people to perceive their acts as legal and therefore worthy (or at least not blameworthy),<sup>20</sup> uncertainty stemming only from the likelihood of enforcement—in situations in which the illegality of an action is clear—leaves people with no choice but to view the behavior itself as wrong. Thus, we expect to find that people are less willing to engage in regulated activities when the source of uncertainty lies primarily in the enforcement of a law and not in the content of the law itself.

To test these predictions, we designed a series of between-subjects experimental surveys<sup>21</sup> that measured and compared participants’ attitudes toward compliance in conditions of uncertainty. In the scenarios given to participants, their chances of being sanctioned were identical; we manipulated whether the source of uncertainty was

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sionmakers are not aware of the probabilities. From this perspective, our study examines decisionmaking under uncertainty and not ambiguity.

<sup>19</sup> See Alex Raskolnikov, *Revealing Choices: Using Taxpayer Choice to Target Tax Enforcement*, 109 COLUM. L. REV. 689, 716–17 (2009) (presenting model of expected sanctions with sequential probabilities).

<sup>20</sup> For an empirical demonstration of the role of motivated reasoning in the interpretation of uncertain legal standards, see Yuval Feldman & Alon Harel, *Social Norms, Self-Interest and Ambiguity of Legal Norms: An Experimental Analysis of the Rule vs. Standard Dilemma*, 4 REV. L. & ECON. 81 (2008).

<sup>21</sup> In a between-subjects experimental survey, different groups of subjects are exposed to different treatment conditions. The groups are then compared to each other.

in the legality of the behavior or in the likelihood of enforcement.<sup>22</sup> Overall, these studies confirmed our main hypothesis that people are less likely to comply when the source of uncertainty is in the law itself, compared to when the source of uncertainty is in the enforcement but the illegality of the act is clear.<sup>23</sup> Given that there may be major differences in attitudes toward the law between Israelis and Americans,<sup>24</sup> we conducted one study in the United States and two studies in Israel. Our results did not detect a significant difference between the two groups of people.

This Article is organized as follows. In Part I we describe the background for the study. We review the traditional literature dealing with legal probabilities and flesh out some of its drawbacks. We then present several bodies of literature that point out potential distinctions between different types of legal probabilities. Building on these studies, we suggest several hypotheses as to the differences between legal probabilities in different settings. Part II describes the design of the experiments and their results. Finally, in Part III we explore potential policy implications of our results and address the limitations of our study.

## I BACKGROUND

The traditional law and economics and behavioral legal literatures treat different legal probabilities as fungible. In this Part, we first review this traditional literature. Then, in order to introduce our hypothesis that legal probabilities are not fungible, we discuss the existing literatures on the expressive value of law, shaming sanctions,

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<sup>22</sup> See *infra* Part II.A–B (discussing study design for all three studies); *infra* Part II.C (presenting methodology and findings of first study). Further dimensions were added in the second and third studies. See *infra* Part II.D–E.

<sup>23</sup> See *infra* Part II.C (demonstrating Study I results confirm hypothesis); *infra* Part II.D (demonstrating Study II results confirm hypothesis); *infra* Part II.E (demonstrating Study III results confirm hypothesis).

<sup>24</sup> For a cross-cultural study exploring the links between cultural values and behavior, see generally Peter B. Smith et al., *Cultural Values, Sources of Guidance, and Their Relevance to Managerial Behavior: A 47-Nation Study*, 33 J. CROSS-CULTURAL PSYCHOL. 188 (2002). For a discussion of Israeli attitudes toward the law, examining the effect of religiosity and political ideology on legal disobedience among Israeli citizens, see generally Dana Yagil & Arye Rattner, *Between Commandments and Laws: Religiosity, Political Ideology, and Legal Obedience in Israel*, 38 CRIME L. & SOC. CHANGE 185 (2002). For a review of studies that compare the role of the rule of law in Israel and in the United States and for new data on related differences between Americans and Israelis in the informal enforcement of rule breaking, see Yuval Feldman & Orly Lobel, *Decentralized Enforcement in Organizations: An Experimental Approach*, 2 REG. & GOVERNANCE 165, 174–75 (2008).

and motivated reasoning—each of which supports our hypothesis and helps to explain our empirical findings discussed in Part II.

### A. Fungible Legal Probabilities

Legal economists, for the most part, view law as a social tool that creates a menu of prices for harmful behaviors that should be regulated.<sup>25</sup> Thus, the seminal insight of the law and economics movement is that the tools of price theory can be employed to predict the way different legal rules will influence people's behavior.<sup>26</sup> Based on this insight, legal economists model the incentives created by an array of legal payments. Contract damages are viewed as a price for breach of contract,<sup>27</sup> tort compensation as a price for engaging in risky behavior,<sup>28</sup> and criminal punishment as a price for the commission of crime.<sup>29</sup>

Yet from the outset, law and economics scholars realized that unlike prices for goods in the marketplace, legal prices are in many cases probabilistic.<sup>30</sup> For example, when a driver speeds on the highway, she will have to pay the legal price for speeding (i.e., a fine)

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<sup>25</sup> See, e.g., ROBERT COOTER & THOMAS ULEN, *LAW AND ECONOMICS* 3–4 (4th ed. 2004) (presenting basic positive and normative aspects of economic analysis of law). For a legal economist's alternative view of law, presenting a unified theory of both prices and sanctions to advance understanding of how law controls behavior, see generally Robert Cooter, *Prices and Sanctions*, 84 COLUM. L. REV. 1523 (1984).

<sup>26</sup> COOTER & ULEN, *supra* note 25, at 3–4; see also Russell B. Korobkin & Thomas S. Ulen, *Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics*, 88 CAL. L. REV. 1051, 1054–55 (2000) (discussing rational choice model proposed by traditional law and economics scholarship, noting that that model explores interaction between legal rules and society and can be conceptualized as “presumption that individuals act [either] to maximize their expected utility . . . or . . . to maximize their self-interest”).

<sup>27</sup> See, e.g., Steven Shavell, *Damage Measures for Breach of Contract*, 11 BELL J. ECON. 466, 468–69 (1980) (explaining need for damage measures for breach of contract as substitute for contracts that specify obligations of contracting parties under all possible contingencies); Steven Shavell, *The Design of Contracts and Remedies for Breach*, 99 Q. J. ECON. 121, 130–31 (1984) (modeling breach decisions as function of cost of performance and cost set for breach by legal system).

<sup>28</sup> See, e.g., COOTER & ULEN, *supra* note 25, at 323–33 (modeling individuals' decisions as to level of care they take as function of liability they incur through tort system).

<sup>29</sup> See, e.g., Becker, *supra* note 1, at 176–79 (presenting analysis of legal prices of criminal offenses given probability of conviction, length of punishment, and other variables). Later contributions continued this line of thought and modeled the different substitution effects between legal prices. See, e.g., Neal Kumar Katyal, *Deterrence's Difficulty*, 95 MICH. L. REV. 2385, 2389–420 (1997) (analyzing substitution between types of crimes, noting that “illegality often makes activities substitutes when they wouldn't ordinarily be so”); Doron Teichman, *The Market for Criminal Justice: Federalism, Crime Control, and Jurisdictional Competition*, 103 MICH. L. REV. 1831, 1839–49 (2005) (analyzing criminals' ex ante decisions of where to commit certain crimes).

<sup>30</sup> For the initial contribution in this regard, see Becker, *supra* note 1.

only in those rare cases in which a police officer actually catches her and writes her a ticket. Recognizing this, economic models of deterrence (starting with Becker's seminal paper on crime and punishment)<sup>31</sup> did not focus on the sanctions actually applied to punished wrongdoers. Rather, they focused on the expected sanction wrongdoers face *ex ante*—which is calculated by multiplying the size of the sanction by the probability that it actually will be inflicted on the wrongdoer.<sup>32</sup>

The expected sanction is a complex term that is comprised of several factors. While the probability of detection often draws the most attention,<sup>33</sup> many other probabilistic hurdles stand in the way of sanctioning wrongdoers. After the police detect a wrongdoer, the prosecution must decide to press charges against her. Various considerations, such as the prosecutor's case load, might cause the prosecution not to file charges.<sup>34</sup> Similarly, once the prosecution decides to press charges, the wrongdoer still must be convicted in court before a sanction can be imposed. Court proceedings may fail to secure a conviction, even in the case of a guilty defendant, for a variety of reasons. One group of such reasons relates to difficulties in proving the wrongful act at the level of certainty required by law. Issues such as witness credibility and the ability to produce documents inherently introduce uncertainty into the legal process, meaning that not all guilty defendants will be convicted.

This Article focuses on uncertainty created by the law itself. Law is inherently uncertain. This uncertainty has two main sources. First, uncertainty can result from the inherent limitations of language—the inability of written law to account, in advance, for its every potential

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<sup>31</sup> *Id.*

<sup>32</sup> Examples of this line of analysis appear often in legal scholarship. *See, e.g.*, Michael G. Allingham & Agnar Sandmo, *Income Tax Evasion: A Theoretical Analysis*, 1 J. PUB. ECON. 323, 324–27 (1972) (applying legal probability theory to taxpayer decision whether to report income truthfully); Isaac Ehrlich, *Crime, Punishment, and the Market for Offenses*, 10 J. ECON. PERSP. 43, 46–48 (1996) (analyzing “supply” of criminal offenses, taking into account many factors, including probability of apprehension and conviction and prospective penalty if convicted). For an updated review of the model, examining the state's use—or threatened use—of monetary and nonmonetary sanctions to deter undesirable acts, see STEVEN SHAVELL, *FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW* 473–514 (2004).

<sup>33</sup> *See* Oren Bar-Gill & Alon Harel, *Crime Rates and Expected Sanctions: The Economics of Deterrence Revisited*, 30 J. LEGAL STUD. 485, 495 (2001) (noting general assumption in standard models of deterrence that probability of punishment is solely dependent on resources dedicated to enforcement).

<sup>34</sup> On the role of prosecutorial discretion in the United States criminal justice system, *see* Robert L. Misner, *Recasting Prosecutorial Discretion*, 86 J. CRIM. L. & CRIMINOLOGY 717, 741–59 (1996), which argues that prosecutorial discretion has increased in recent decades.

application. For example, it might be unclear whether a law that forbids “vehicles” from entering a park applies to bicycles, roller skates, or even toy automobiles.<sup>35</sup> Thus, bicycle riders deciding whether to ride through the park face uncertainty as to the legal ramifications of their choice. Second, the law includes an array of standards that depend on an ex post evaluation of actors’ acts in order to impose legal liability. Terms such as “negligence” in tort law, “good faith” in contract law, and “fair use” in copyright law all create uncertainty regarding the legal consequences of an act. For example, an artist deciding whether to incorporate copyrighted material into her own work can only reach an educated prediction as to the possibility of legal liability.

While legal economists recognize the different probabilistic aspects of legal prices, they treat the different probabilities as fungible from the perspective of potential wrongdoers. For example, in an influential article exploring the effects of uncertain legal standards on deterrence theory, Richard Craswell and John E. Calfee explicitly assume that all legal probabilities are fungible.<sup>36</sup>

To the extent that legal economists are willing to acknowledge that different probabilities might be treated differently by potential wrongdoers, their exclusive treatment of the issue focuses on the distinct monetary consequences of potential contingencies.<sup>37</sup> In a more recent paper, Kyle D. Logue examines the design of an optimal deterrence policy given the ambiguity associated with tax law.<sup>38</sup> Tax law is inherently probabilistic due to its uncertainty,<sup>39</sup> and Logue describes this uncertainty as a continuum: At one end lie positions that are clearly illegal (i.e., the probability of illegality is one hundred percent), while at the other end lie positions that are clearly legal (i.e., the probability of illegality is zero percent).<sup>40</sup> Between these two extremes lies the vast body of tax law in which the illegality is uncertain (i.e., the probability of illegality is between zero and one hundred percent).<sup>41</sup> Following traditional deterrence models,<sup>42</sup> Logue assumes

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<sup>35</sup> This is an allusion to Hart’s famous example in H.L.A. Hart, *Positivism and the Separation of Law and Morals*, 71 HARV. L. REV. 593, 607 (1958).

<sup>36</sup> Richard Craswell & John E. Calfee, *Deterrence and Uncertain Legal Standards*, 2 J. L. ECON. & ORG. 279, 283 (1986).

<sup>37</sup> *Id.* at 283 n.10.

<sup>38</sup> See generally Kyle D. Logue, *Optimal Tax Compliance and Penalties When the Law Is Uncertain*, 27 VA. TAX REV. 241 (2007).

<sup>39</sup> *Id.* at 254–55.

<sup>40</sup> *Id.* at 251.

<sup>41</sup> *Id.*

<sup>42</sup> *Id.* at 244–45.

that taxpayers treat the probabilities of detection and of legal ambiguity as fungible.

The behavioral legal literature has dealt extensively with different questions concerning legal probabilities and decisionmaking in the deterrence model.<sup>43</sup> For example, in a recent study, Ehud Guttel and Alon Harel examine the legal implications of the different ways in which people perceive uncertainty relating to the past and uncertainty relating to the future.<sup>44</sup> They first point out the robust psychological literature that demonstrates that people prefer taking risks regarding future events over taking risks regarding past events.<sup>45</sup> They then review the legal implications of these findings,<sup>46</sup> pointing out that deterrence can be enhanced by a simple move like determining the identity of those whom the tax authority will audit at the beginning of the tax year rather than at its end.<sup>47</sup>

In another behavioral study closely related to our project, Alon Harel and Uzi Segal employ insights from cognitive psychology to compare the way potential criminals treat uncertainty concerning sanction size and uncertainty concerning the probability of detection.<sup>48</sup> They first review the insights of cognitive psychology regarding the way people treat uncertain gains and losses and the aversion people demonstrate toward ambiguous situations.<sup>49</sup> These insights lead Harel and Segal to argue that increasing the certainty of sanction size while decreasing the certainty of detection may enhance deterrence.<sup>50</sup> They then examine an array of specific legal questions ranging from the desirability of the prohibition against retroactive punishment to the optimal structure of sentencing guidelines.<sup>51</sup>

For the most part, the behavioral legal literature builds on existing studies in the area of cognitive psychology, exploring how different biases documented in those studies affect the evaluation of different legal regimes. In other words, these studies are driven by the fit between the factual situation that creates the cognitive bias and the legal regime. Thus, while this literature recognizes that not all

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<sup>43</sup> See sources cited *supra* notes 9–10 for major contributions to this literature.

<sup>44</sup> Guttel & Harel, *Uncertainty Revisited*, *supra* note 10.

<sup>45</sup> *Id.* at 471–79.

<sup>46</sup> *Id.* at 479–98.

<sup>47</sup> *Id.* at 488–90.

<sup>48</sup> Alon Harel & Uzi Segal, *Criminal Law and Behavioral Law and Economics: Observations on the Neglected Role of Uncertainty in Detering Crime*, 1 AM. L. & ECON. REV. 276 (1999).

<sup>49</sup> *Id.* at 294–302. For the precise meaning of the term “ambiguous” in this literature, see *supra* note 18.

<sup>50</sup> *Id.* at 294–306.

<sup>51</sup> *Id.* at 306–09.

probabilities are created equal, it does not explore the role of law itself in the perception of probabilities.

### B. *The Non-fungible Legal Probabilities Hypothesis*

While previous studies have taken people's behavioral characteristics as given and have applied them to different legal settings, our approach is different. We view law as an integral part of decision-making and as a device that can affect behavior. Thus, our analysis starts from law, examining whether the legal characteristic of a given probability affects the way individuals perceive it and the way they can be expected to behave. We hypothesize that it matters to people whether the source of uncertainty regarding a legal payment is lack of enforcement by the police, a large case load on the local prosecutor, or uncertainty in the law itself. We now turn to review several bodies of literature that lead us to reject the traditional "fungible probabilities" hypothesis in favor of the competing "non-fungible probabilities" hypothesis.

#### 1. *The Expressive Value of Law*

A major body of both theoretical and empirical literature that challenges the view that legal payments simply reflect prices is the scholarship emphasizing the expressive value of law.<sup>52</sup> Expressive theories of law consist of an array of distinct claims, including theories of lawmaking, claims about the connection between the law and social norms, and positive predictions as to the way different legal expressions affect behavior.<sup>53</sup> In the context of regulation and sanctioning,

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<sup>52</sup> See generally, e.g., Patricia Funk, *Is There an Expressive Function of Law? An Empirical Analysis of Voting Laws with Symbolic Fines*, 9 AM. L. & ECON. REV. 135 (2007) (presenting empirical study demonstrating that even small sanctions are effective, arguably because of "expressive effect of law"); Richard H. McAdams & Janice Nadler, *Testing the Focal Point Theory of Legal Compliance: The Effect of Third-Party Expression in an Experimental Hawk/Dove Game*, 2 J. EMPIRICAL LEGAL STUD. 87 (2005) (presenting results of empirical study supporting claim that third-party legal expression influences behavior by creating focal point around which individuals coordinate); Cass R. Sunstein, *On the Expressive Function of Law*, 144 U. PA. L. REV. 2021 (1996) (discussing general theory of expressive law); Iris Bohnet & Robert D. Cooter, *Expressive Law: Framing or Equilibrium Selection?* (Univ. of Cal. Berkeley Sch. of Law, Public Law and Legal Theory Research Paper No. 138, 2003), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=452420](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=452420) (demonstrating empirically that in game-based settings, sanctions affect behavior by changing beliefs).

<sup>53</sup> See generally Dan M. Kahan, *What Do Alternative Sanctions Mean?*, 63 U. CHI. L. REV. 591 (1996) (discussing expressive aspects of sanctioning); Cass R. Sunstein, *Social Norms and Social Roles*, 96 COLUM. L. REV. 903 (1996) (exploring connection between expressive law and social norms). For a critical view, challenging expressivists' claim that "linguistic meaning is an irreducible moral factor" and instead positing that any connection between the moral importance and the linguistic meaning of government acts is purely

the basic claim of expressive theories is that a legal prohibition of an act in itself causes people to avoid committing that act.<sup>54</sup> Thus, even a legal rule that is not backed by a legal sanction is expected to affect people's behavior.<sup>55</sup>

In the context of our study, to the extent that legal prohibitions carry an expressive power that independently influences people, two theoretical mechanisms could explain the difference between the behavioral effects of legal uncertainty and enforcement uncertainty. First, in comparison to the instrumental function of the law, law's expressive power is less affected by the likelihood of enforcement, as it is less sensitive to sanctions.<sup>56</sup> Thus, even if the product of the two probabilities is mathematically identical, from an expressive perspective the question of legality carries greater meaning. For this reason, one might expect enforcement uncertainty to have less influence on behavior than legal uncertainty. In other words, given that the expressive effect is related not to the likelihood of conviction but rather to

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contingent, see Matthew D. Adler, *Expressive Theories of Law: A Skeptical Overview*, 148 U. PA. L. REV. 1363, 1375–76 (2000).

<sup>54</sup> See generally Joel Feinberg, *The Expressive Function of Punishment*, 49 *MONIST* 397 (1965), reprinted in JOEL FEINBERG, *DOING AND DESERVING: ESSAYS IN THE THEORY OF RESPONSIBILITY* 95 (1970) (arguing that punishment has expressive function absent from other kinds of penalties, as it expresses resentment and disapproval on part of punishing authority or those "in whose name" punishment is imposed). For a discussion of the law's expressive power even in the absence of punishment, see Ryan Goodman, *Beyond the Enforcement Principle: Sodomy Laws, Social Norms, and Social Panoptics*, 89 *CAL. L. REV.* 643 (2001), which explains how a prohibition which is not enforced may still carry social meaning. For a more general statement of this idea, see Dan M. Kahan, *Social Influence, Social Meaning, and Deterrence*, 83 *VA. L. REV.* 349 (1997), which argues that laws that regulate social meaning are often the most cost-effective means of preventing crime. For a contemporary analysis of how prohibitions can alter preferences, see generally Kenneth G. Dau-Schmidt, *An Economic Analysis of the Criminal Law as a Preference-Shaping Policy*, 1990 *DUKE L.J.* 1, which argues that criminal punishment is intended to promote social norms of individual behavior by shaping individuals' preferences, and which discusses the policy implications of preference-shaping theory.

<sup>55</sup> See McAdams & Nadler, *supra* note 52 (presenting results of empirical study in which legalistic expressions about "rules" or "penalties" were avoided in study design, finding that apart from potential compliance-generating effects of sanctions, third-party legal expression influences behavior by creating focal point around which individuals coordinate); Funk, *supra* note 52 (showing empirically that in public good areas—e.g., voting—fear of *social* sanctions or sense of civic duty can induce conformity even where law is formally without sanction).

<sup>56</sup> To be sure, this argument should be qualified: A situation in which there is no enforcement or harsh enforcement may in fact carry an expressive message. See Franklin Zimring & Gordon Hawkins, *The Legal Threat as an Instrument of Social Change*, 27 *J. SOC. ISSUES* 33, 39–40 (1971) (discussing interrelations between formal deterrence and moral judgment of act). For a critique of the extent of deterrence's effect on the development of moral commitment, arguing that "there is very little evidence to support the idea that morality is best taught by fear of legal punishment," see H.L.A. HART, *LAW, LIBERTY AND MORALITY* 58 (1963).

the message conveyed by the law, uncertainty regarding the legality of an act carries greater importance than uncertainty regarding the likelihood of sanction. Second, the expressive power is more sensitive to the clarity of the law, since part of it stems from the clear message the law can convey.<sup>57</sup> Many of the studies exploring the mechanisms that underlie the expressive function of the law show that its power comes from its ability to communicate a message about morality, social norms, or scientific truth.<sup>58</sup> The vaguer a legal norm, the less its expressive power; thus, legal uncertainty can be expected to have a higher effect on the regulated behavior.

## 2. *Shaming Sanctions*

A second strand of relevant literature is socio-legal, dealing with motivations for legal compliance.<sup>59</sup> The classical deterrence perspective focuses on external motivation and fear of sanction as motivators for legal compliance.<sup>60</sup> The opposite perspective suggests that much of the motivation to obey the law is related to internalized values and moral reasoning.<sup>61</sup> With the recognition of the importance of social

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<sup>57</sup> Sunstein, *supra* note 52, at 2050 (“For law to perform its expressive function well, it is important that law communicate well.”).

<sup>58</sup> For a review of some of these theories, evaluating which theoretical models best explain the expressive effect of legality in the context of trade secret laws, see Yuval Feldman, *The Expressive Function of Trade Secret Law: Legality, Cost, Intrinsic Motivation, and Consensus*, 6 J. EMPIRICAL LEGAL STUD. 177 (2009).

<sup>59</sup> See, e.g., Peter J. May, *Compliance Motivations: Affirmative and Negative Bases*, 38 LAW & SOC’Y REV. 41 (2004) (providing theoretical and empirical support for distinction between negative motivations and affirmative motivations and noting that both types of motivations are influenced by peer reputation concerns).

<sup>60</sup> See FRANKLIN E. ZIMRING & GORDON J. HAWKINGS, *DETERRENCE: THE LEGAL THREAT IN CRIME CONTROL* 3 (1973) (“[T]here is the potent, ubiquitous, seemingly irrefutable thesis that attaching unpleasant consequences to behavior will reduce the tendency of people to engage in that behavior.”); cf. Matthew Silberman, *Toward a Theory of Criminal Deterrence*, 41 AM. SOC. REV. 442, 457–58 (1976) (finding that certainty, severity, and threat of punishment, among other things, affect probability that offense will be committed).

<sup>61</sup> See generally Tom R. Tyler & John M. Darley, *Building a Law-Abiding Society: Taking Public Views About Morality and the Legitimacy of Legal Authorities into Account When Formulating Substantive Law*, 28 HOFSTRA L. REV. 707 (2000) (arguing that facilitating compliance with law through appeal to social values is superior to facilitating through threat or use of force); cf. John M. Darley et al., *The Ex Ante Function of the Criminal Law*, 35 LAW & SOC’Y REV. 165, 167–68 (2001) (suggesting that whether people think behavior is illegal depends on whether they view it as immoral, regardless of actual content of law). But see Charles R. Tittle & Alan R. Rowe, *Moral Appeal, Sanction Threat, and Deviance: An Experimental Test*, 20 SOC. PROBS. 488, 492 (1973) (presenting study on classroom cheating, which found that “fear of sanction is a more important influence than moral appeal in generating conformity to the norm of classroom honesty”).

controls,<sup>62</sup> legal scholars have increased the scope of their research to include shaming sanctions.<sup>63</sup> Within this literature, a similar distinction between external and internal motivation exists with respect to shame and guilt as motivating factors of behavior.<sup>64</sup> Shame is a form of external sanctioning inflicted by fellow members of the community. Guilt, on the other hand, is an internal process through which the individual feels negative emotions as a result of disobeying the law.<sup>65</sup> Because feelings of guilt are built upon a process of internalization, they are expected to be less sensitive to the probability of detection than are feelings of shame. In other words, when people internalize the legal norm, they suffer disutility from disobeying it regardless of whether they are caught. Thus, when a person's motivation to comply stems from feelings of guilt, we expect her to be more willing to disobey the law when uncertainty stems from the law itself than when uncertainty stems from enforcement problems.<sup>66</sup> But when her motivation to comply stems from feelings of shame, we expect that the source of uncertainty is less critical because the likelihood of getting caught defines her expected cost.

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<sup>62</sup> See Robert F. Meier & Weldon T. Johnson, *Deterrence as Social Control: The Legal and Extralegal Production of Conformity*, 42 AM. SOC. REV. 292, 297–303 (1977) (arguing, based on empirical study of legal and extralegal factors pertaining to marijuana use and nonuse, that deterrence theory should be supplemented by social control theory). As used by Meier and Johnson, “social control” is a reference to “social mechanisms invoked to establish, inhibit or change human behavior.” *Id.* at 293 n.2.

<sup>63</sup> See generally, e.g., Alon Harel & Alon Klement, *The Economics of Stigma: Why More Detection of Crime May Result in Less Stigmatization*, 36 J. LEGAL STUD. 355 (2007) (pointing out limitations of shaming from economic perspective); Dan M. Kahan & Eric A. Posner, *Shaming White-Collar Criminals: A Proposal for Reform of the Federal Sentencing Guidelines*, 42 J.L. & ECON. 365 (1999) (discussing economic efficiency of formal shaming sanctions for white-collar criminals); Toni M. Massaro, *Shame, Culture, and American Criminal Law*, 89 MICH. L. REV. 1880 (1991) (discussing various types of modern shame sanctions and their resemblance to historical shame sanctions); Doron Teichman, *Sex, Shame, and the Law: An Economic Perspective on Megan's Laws*, 42 HARV. J. ON LEGIS. 355 (2005) (analyzing sex offender registration and notification laws as type of shame sanction); James Q. Whitman, *What Is Wrong with Inflicting Shame Sanctions?*, 107 YALE L.J. 1055 (1998) (criticizing use of shame sanctions).

<sup>64</sup> For a discussion of the distinctions among feelings of shame, guilt, and embarrassment, see June Price Tangney et al., *Are Shame, Guilt, and Embarrassment Distinct Emotions?*, 70 J. PERSONALITY & SOC. PSYCHOL. 1256, 1263–68 (1996).

<sup>65</sup> For one of the leading law and economics perspectives on internalized values—examining their distribution, causes, and effects—see generally Robert Cooter, *Do Good Laws Make Good Citizens? An Economic Analysis of Internalized Norms*, 86 VA. L. REV. 1577 (2000).

<sup>66</sup> In our third study, we compare the interaction between legal uncertainty and whether the motivation to comply is internal or external. See *infra* Part II.E.

### 3. *Motivated Reasoning*

A third body of relevant literature deals with motivated reasoning.<sup>67</sup> According to this literature, decisionmakers attempt to make choices that they believe can later be justified to a dispassionate observer.<sup>68</sup> In other words, people want to avoid a dissonance between how they behave and how they think they ought to behave. As a group of commentators recently noted in an example of motivated reasoning:

[P]eople who pass by a gas station will be influenced not only by the expected amount of cash they stand to gain from robbing the place, the probability of being caught, and the magnitude of punishment if caught[,] but also by the way the act of robbing the store might make them perceive themselves.<sup>69</sup>

Indeed, people are sufficiently averse to negative self-perception that they may resort to an array of internal reasoning tools to avoid categorizing borderline acts as immoral or dishonest.<sup>70</sup>

While psychologists have not yet specifically explored the connection between motivated reasoning and *legal* uncertainty, some have studied the relationship between motivated reasoning and uncertainty in nonlegal contexts. Maurice E. Schweitzer and Christopher K. Hsee, for example, have demonstrated that in a negotiation setting in which the costs and benefits to the parties were held constant, the parties' decisions to disclose private information to the opposing side were influenced by what Schweitzer and Hsee term the "elasticity" of the private information—that is, how uncertain it is.<sup>71</sup> In one study, they examined the willingness of parties to disclose harmful, privately-held information when negotiating the sale of a car.<sup>72</sup> Sellers were informed that the odometer of the car being sold had been disconnected but that buyers would believe them if told that the actual mileage was 60,000. Sellers were then divided into two groups: The low-elasticity group was told that the actual number of miles that the

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<sup>67</sup> For a review of this literature and a description of the various mechanisms underlying motivated reasoning, see generally Ziva Kunda, *The Case for Motivated Reasoning*, 108 PSYCHOL. BULL. 480 (1990).

<sup>68</sup> *E.g.*, *id.* at 493.

<sup>69</sup> Nina Mazar et al., *The Dishonesty of Honest People: A Theory of Self-Concept Maintenance*, 45 J. MARKETING RES. 633, 634 (2008).

<sup>70</sup> See Nina Mazar & Dan Ariely, *Dishonesty in Everyday Life and Its Policy Implications*, 25 J. PUB. POL'Y & MARKETING 117, 121–22 (2006) (analyzing role of self-deception in dishonest behavior).

<sup>71</sup> Maurice E. Schweitzer & Christopher K. Hsee, *Stretching the Truth: Elastic Justification and Motivated Communication of Uncertain Information*, 25 J. RISK & UNCERTAINTY 185, 185–86 (2002) (providing evidence of strategic use of elastic information by participants in series of four studies).

<sup>72</sup> *Id.* at 189–92.

car had been driven was between 74,000 and 76,000, and the high-elasticity group was told that the number was between 60,000 and 90,000 (with equal probabilities within the range for each group). According to a rational choice model of pure self-interest, sellers from *both* control groups are expected to tell the other party that the mileage is only 60,000.<sup>73</sup> Yet Schweitzer and Hsee report that the parties tended to disclose values higher than 60,000 and, more importantly for our purposes, that the average mileage claimed by the low-elasticity group was significantly higher than that claimed by the high-elasticity group.<sup>74</sup> These results demonstrate the importance of motivated reasoning and self-serving justifications in a probabilistic setting: Members of the low-elasticity group could not represent to buyers a mileage figure below 74,000 without knowing for certain that they were deceiving them; members of the high-elasticity group, on the other hand, could claim that the mileage was only 60,000 by convincing themselves that stating this figure was not a misrepresentation. Thus, in this negotiations setting, higher uncertainty regarding the actual mileage of the car allowed sellers to claim a lower mileage that would better serve their own self-interest.

Exploring motivated reasoning in a legal context, Yuval Feldman and Alon Harel show that when faced with uncertain legal standards, participants' tendency to choose an interpretation that fits their self-interest grows as the expected benefits from noncompliance rise.<sup>75</sup> The authors view this result as an indication that the interpretation of legal standards is driven by motivated reasoning because participants make greater use of uncertainty when the temptation to shirk is stronger.<sup>76</sup>

The bias toward interpreting one's own behavior as moral suggests a distinction between the effects of enforcement uncertainty and those of legal uncertainty. For this study, we hypothesize that legal uncertainty allows people to discount their internal fear of behaving inappropriately because such behavior can be justified as an honest mistake—e.g., misinterpretation of the law—and not be seen as the result of an inappropriate or immoral rational decisionmaking process. Because, by contrast, the threat of enforcement does not appeal to such a bias, we can expect enforcement uncertainty to have less effect on people's behavior than legal uncertainty. Thus, we are again

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<sup>73</sup> *Id.* at 190.

<sup>74</sup> *Id.* More specifically, the average mileage claimed in the low-elasticity group was 70,764, while the average mileage claimed in the high-elasticity group was only 68,354. *Id.*

<sup>75</sup> Feldman & Harel, *supra* note 20, at 102–06.

<sup>76</sup> *Id.* at 105–06; *see also id.* at 89–90 (“Motivated reasoning manifests itself as a tendency to evaluate information in a way beneficial to the agent's narrow self-interest.”).

drawn to the hypothesis that people will be more likely to engage in an uncertainly regulated activity when the source of uncertainty is the content of the law itself rather than the mechanisms of the law's enforcement.

## II

### THE EXPERIMENTS

#### A. *Participants and Design*

To test our propositions, we conducted an experimental survey study using situational vignettes in a between-subjects design<sup>77</sup> on populations of law students in the United States and Israel.<sup>78</sup> We sampled a total of 422 students at Tulane University,<sup>79</sup> Bar-Ilan University,<sup>80</sup> and the Hebrew University of Jerusalem.<sup>81</sup>

Participants were randomly assigned to one of several equally-sized groups and given a questionnaire structured around one of several variations on the following legal dilemma: Acting as a fertilizer factory manager, would you or would you not decide to produce a chemical that might pollute a nearby lake? Participants were asked questions regarding their personal evaluations of the dilemma, how they would behave in the depicted scenario,<sup>82</sup> how they perceived social norms regarding such decisions, and their willingness to pay to abstain from polluting.<sup>83</sup> These questions were used to construct

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<sup>77</sup> For an explanation of between-subjects designs, see *supra* note 21.

<sup>78</sup> The use of students in general, and law students in particular, naturally limits our ability to extrapolate from this sample to the general population. For further discussion of this point, see *infra* Part III.C.

<sup>79</sup> Study I was conducted at Tulane University and included 69 students.

<sup>80</sup> Study II was conducted at Bar-Ilan University and included 159 students.

<sup>81</sup> Study III was conducted at the Hebrew University of Jerusalem and included 194 students.

<sup>82</sup> Aside from focusing on people's intention to behave, we also measured factors such as morality and perceived social norms. These factors were measured in order to broaden our understanding of people's attitudes toward the pollution, rather than focusing merely on intention to behave. This approach is based on the widely used paradigm of planned behavior, common in attitude studies. See Icek Ajzen, *From Intentions to Actions: A Theory of Planned Behavior*, in ACTION CONTROL: FROM COGNITION TO BEHAVIOR 11, 29–35 (Julius Kuhl & Jürgen Beckmann eds., 1985) (suggesting that performance of intended behavior depends on certain factors “only partly under volitional control,” including will power, ability to control factors that may prevent performance, attitudes, subjective norms, and influence of past behavior); see also *id.* at 12 (stating that theory of planned behavior “takes into account perceived as well as actual control over the behavior under consideration”). A possible limitation of measuring all these items at once is multicollinearity: Correlations among the factors may make it difficult to determine their separate effects. Also, the ordering of the variables may affect the results.

<sup>83</sup> We use the term “willingness to pay”—even though the question asked people about their willingness to *forgo* a payment by refusing to pour the chemical—because the term is commonly used to refer to a measure of the intensity of people's preferences.

independent variables—uncertainty type (in all three studies), sanction type (in the second study), and environmental context (in the third study)—and to analyze their effect on the dependent variables.

## B. Variables

### 1. *The Independent Variables*

In all three studies, we examined the effects of two different uncertainty types: legal uncertainty and enforcement uncertainty. Participants in the *Legal Uncertainty* subgroup were told that the questionable action (disposing of the chemical into the lake) may or may not be deemed illegal because the chemical is relatively new and its legal status has not yet been determined; if the action is illegal, however, enforcement is certain because the authorities will be able to identify the factory that poured the chemical into the lake. Participants in the *Enforcement Uncertainty* subgroup were told that pouring the chemical into the lake is clearly illegal but that successful enforcement is unlikely as there is a low chance that the authorities would be able to detect the identity of the polluting factory. Participants in both uncertainty-type subgroups were told that the overall likelihood of punishment (the probability of illegality multiplied by the probability of successful prosecution) is ten percent.

The second and third studies, unlike the first, examined two independent variables, each of which had two levels.<sup>84</sup> The second study examined the effects of different sanction types in addition to the effects of the different uncertainty types described above. Participants in the *Criminal Sanction* subgroup were told that the state would enforce a criminal law against pollution and that such enforcement would result in a fine. Participants in the *Civil Sanction* subgroup were told that a private party would sue to enforce a civil law and payment would be paid as damages rather than a fine.

For the third and final study, we examined the effects of different rationales for the law along with the effects of different uncertainty types. Here, the additional independent variable was environmental context. Participants in the *Damage* subgroup were provided with an explanation for the law: It has been enacted to prevent the death of fish in the lake. Participants in the *No Damage* subgroup were told that there is no extralegal rationale for the law because no fish in this specific lake are sensitive to the chemical in question.

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<sup>84</sup> That is, the second and third studies employed a “2×2” design.

## 2. *The Dependent Variables*

The dependent variables<sup>85</sup> in these studies were self-reported and measured on a Likert scale (1 to 10).<sup>86</sup> The first two variables related to the social and moral desirability of compliance and noncompliance. *Perceived Morality* was measured by asking participants whether producing the fertilizer in the described legal situation would be morally acceptable (1 = acceptable, 10 = unacceptable). *Perceived Social Desirability* was measured by asking participants whether producing the fertilizer in the described legal situation would be socially desirable (1 = desirable, 10 = undesirable).

The next two variables related to participants' perceptions regarding the prevalence of compliance—i.e., their expectations of how others would behave in the same situation. *Industry-Wide Non-compliance* was measured by asking participants the percentage of factories in the country that they expected would, in the same circumstances, choose to produce the fertilizer (1 = 10%, 10 = 100%).<sup>87</sup> *Managerial Noncompliance* was measured by asking participants how strongly they agreed with the notion that “most managers would decide to produce the fertilizer in the given legal situation” (1 = agree, 10 = disagree).

The last three variables related to the participants' intended future behavior. *Attempt To Comply* was measured by asking participants whether they agreed that “[i]f possible I will try not to produce the fertilizer in the given legal situation” (1 = disagree, 10 = agree). *Willingness To Pay* (for compliance) was measured by asking participants whether they agreed that “[e]ven if I receive a high amount of money, I will not produce the fertilizer in the given legal situation” (1 = disagree, 10 = agree). Finally, *Intention To Violate the Law* was measured by asking participants a yes-or-no question: “At the end of the day, would you produce the fertilizer?” (0 = yes, 1 = no).

### C. *Study I: Legal Uncertainty Versus Enforcement Uncertainty*

We begin with a simple benchmark case in which we compare legal uncertainty and enforcement uncertainty. To examine the effect of uncertainty type on participants' attitudes toward the misconduct, we conducted a one-way multivariate analysis of variance

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<sup>85</sup> Dependent variables are the variables that a model explains.

<sup>86</sup> The Likert scale is one of the most common summative scales used in social sciences to rate evaluations or judgments on one dimension. There are a variety of possible response scales; we used scales from 1 to 10.

<sup>87</sup> For this variable, a recode transformation was later conducted so that higher grading indicated lower percentage.

(MANOVA).<sup>88</sup> We compared the uncertainty-type subgroups with respect to the study's dependent variables: attitudes toward the misconduct, perceived prevalence of the misconduct, and personal inclination to perform the misconduct. When we found the uncertainty type to have a significant effect on participants' attitudes, perceptions, or inclinations,<sup>89</sup> we conducted a series of one-way univariate analyses of variance (ANOVA) in order to determine the source of the variance.<sup>90</sup> We then performed a chi-square test ( $\chi^2$ ) to examine the independence between participants' intent to engage in the misconduct and uncertainty type.<sup>91</sup> In table 1 we report the mean scores and standard deviations<sup>92</sup> for attitudes, perceptions, and inclinations as a function of the uncertainty type.

The results show that participants were more likely to produce the chemical under situations of legal uncertainty as opposed to enforcement uncertainty. MANOVA of participants' responses indicated that this difference was statistically significant.<sup>93</sup> ANOVA showed a significant difference between legal and enforcement uncertainty for four of the seven variables: *Perceived Morality*,<sup>94</sup> *Managerial Noncompliance*,<sup>95</sup> *Likelihood of Compliance*,<sup>96</sup> and *Intention To Violate the Law*.<sup>97</sup> For all of these measures, the means were higher in

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<sup>88</sup> MANOVA is a procedure that examines the explained variance in a series of dependent variables by a series of independent variables. This procedure can identify interactions between independent variables as well as other associations between dependent variables.

<sup>89</sup> Statistical significance refers to the likelihood that a certain result occurred by chance. In this Article, every time a difference or a result is presented as "significant," it means that there is less than a five-percent likelihood that it occurred by chance. (The five-percent level of significance is a common threshold used in statistical analysis.) We also indicate when the likelihood that a given result occurred by chance is lower than one percent.

<sup>90</sup> ANOVA aims to identify the sources of variance among participants. In contrast to MANOVA, ANOVA involves only one dependent variable. We used the technique to examine whether the experimental groups are different from each other. More specifically, we used ANOVA to measure how much of the difference between participants can be attributed to their assignment to different subgroups. That is, we measured how much of the differences in participants' responses can be explained by the framing of the legal probability.

<sup>91</sup> A chi-square procedure can be used to test the hypothesis that two different outcomes were obtained by chance. Here we use it to test the two *Intention To Violate the Law* averages (one from each subgroup) with respect to the two different uncertainty types. Specifically, we attempt to reject the hypothesis that the difference in the averages arose due to chance.

<sup>92</sup> Standard deviation is a measure of the spread of a variable around the mean.

<sup>93</sup> Multivariate  $F(7, 61) = 3.18$ ,  $p < 0.01$ ,  $\eta^2 = .27$ .

<sup>94</sup>  $F(1, 67) = 8.43$ ,  $p < 0.01$ ,  $\eta^2 = 0.11$ .

<sup>95</sup>  $F(1, 67) = 8.45$ ,  $p < 0.01$ ,  $\eta^2 = 0.11$ .

<sup>96</sup>  $F(1, 67) = 3.72$ ,  $p < 0.05$ ,  $\eta^2 = 0.05$ .

<sup>97</sup>  $F(1, 67) = 5.85$ ,  $p < 0.01$ ,  $\eta^2 = 0.08$ .

the *Enforcement Uncertainty* subgroup than in the *Legal Uncertainty* subgroup, reflecting more negative attitudes toward production of the fertilizer. This supports our hypothesis: Participants faced with legal uncertainty were more inclined to violate the law than were those faced with enforcement uncertainty. The subgroups did not differ significantly on the other variables.<sup>98</sup>

TABLE 1  
MEAN SCORES AND STANDARD DEVIATIONS (IN PARENTHESES)  
FOR ATTITUDES TOWARD MISCONDUCT AS A FUNCTION OF  
UNCERTAINTY TYPE

<i>Dependent Variable</i>	<i>Legal Uncertainty</i>	<i>Enforcement Uncertainty</i>	<i>Difference Test</i>
Perceived Morality	5.96 (2.97)	7.90 (2.54)	p < 0.01
Perceived Social Desirability	6.46 (2.55)	6.56 (2.67)	N/S
Industry-Wide Noncompliance	4.11 (2.45)	4.63 (2.45)	N/S
Managerial Noncompliance	3.39 (1.57)	4.88 (2.37)	p < 0.01
Attempt To Comply	6.93 (2.85)	8.12 (2.27)	p < 0.05
Willingness To Pay	5.89 (3.09)	6.98 (2.76)	N/S
Intention To Violate the Law	0.57 (0.50)	0.83 (0.38)	p < 0.01

NOTE: The first six items were rated on a ten-point Likert scale. Higher values indicate more negative attitudes toward the misconduct, lower perceived prevalence of the misconduct, and lower inclination to perform the misconduct. The seventh variable, *Intention To Violate the Law*, was rated on a binary scale: 0 (yes) or 1 (no).

Finally, in table 2 we report the frequency distribution of participants as a function of their intention to violate the law under legal and enforcement uncertainty.

The chi-square test indicated a statistically significant dependence between the variables,<sup>99</sup> confirming our ANOVA result. Consistent with our hypothesis, a substantially greater percentage of participants

<sup>98</sup> No covariates are reported because personal background variables were not collected in this study.

<sup>99</sup>  $\chi^2(1, n = 69) = 4.33, p < 0.05$ .

TABLE 2  
DISTRIBUTION OF PARTICIPANTS AS A FUNCTION OF INTENTION TO  
VIOLATE THE LAW AND UNCERTAINTY TYPE

<i>Intention To Violate the Law</i>	<i>Legal Uncertainty</i>	<i>Enforcement Uncertainty</i>
Yes	12	7
No	16	34

in the *Legal Uncertainty* subgroup showed an inclination to violate the law (42.9%) than in the *Enforcement Uncertainty* subgroup (17.1%).

*D. Study II: Legal Probabilities in Civil and Criminal Settings*

In our first experiment, we confirmed our basic hypothesis that legal probabilities are not fungible and demonstrated the difference between enforcement uncertainty and legal uncertainty. This led us to examine the boundaries of this effect and the extent to which it would be repeated in other legal settings. Identifying the areas in which people tend to express an intent to violate the law in situations of legal rather than enforcement uncertainty could both help us understand the theoretical mechanisms that underlie this phenomenon and give policymakers tools to account for this gap more effectively.

Our second experiment tested whether participants' differing reactions to legal and enforcement uncertainty depended on whether the sanction for violating the law was civil or criminal. While civil regulation generally involves litigation between a private party harmed by the acts of another private party, criminal laws are enforced by the state, which brings a legal action against one of its subjects. A large body of theoretical literature has dealt with criminal sanctions' unique social meaning and distinct power to cause people to internalize norms and regulate behavior.<sup>100</sup> In addition, empirical studies suggest that different incentives may be created by tagging a legal payment as either civil or criminal. People are more willing to engage in behavior for a fee when the fee is framed as a price rather than as a punishment.<sup>101</sup> Given that criminal sanctions are framed as punishment, we hypothesized that the effect of legal uncertainty on the dependent variables will be greater in a criminal setting than in a similar civil setting.

<sup>100</sup> See, e.g., Dau-Schmidt, *supra* note 54, at 24–37 (“[T]he fundamental characteristics of criminal law are best explained by a preference-shaping theory.”).

<sup>101</sup> Feldman & Teichman, *supra* note 13, at 246–50.

To examine the effects of the type of sanction and the type of uncertainty on the dependent variables, we conducted two-way multivariate analyses of covariance (MANCOVA) between the sanction type (*Criminal Sanction* or *Civil Sanction*) and the uncertainty type (*Legal Uncertainty* or *Enforcement Uncertainty*). We also conducted a separate one-way analysis of covariance (ANCOVA) for each sanction type comparing the means of the uncertainty-type subgroups.<sup>102</sup> We then performed a chi-square test to examine the independence between the *Intention To Violate the Law* variable and sanction type.

In table 3 we report the mean scores for perceived attitudes and reactions toward the misconduct as a function of the sanction type and the uncertainty type. In addition, table 3 presents the results of the ANCOVA conducted separately for the *Criminal Sanction* and *Civil Sanction* subgroups.<sup>103</sup>

The findings in this study suggest that the difference in behavior under legal uncertainty versus enforcement uncertainty is much greater in the criminal context than in the civil context. This difference was statistically significant.<sup>104</sup> However, the type of sanction did not have a statistically significant effect on the dependent variables as a whole. Finally, the MANCOVA showed a significant interaction effect between the sanction type and the uncertainty type.<sup>105</sup>

Looking at the variables individually presents a more nuanced picture. The univariate tests show a significant difference between the uncertainty-type subgroups for four of the seven variables: *Perceived Morality*,<sup>106</sup> *Perceived Social Desirability*,<sup>107</sup> *Willingness To Pay for Compliance*,<sup>108</sup> and *Intention To Violate the Law*.<sup>109</sup> For all of these variables, the means were higher (indicating lesser inclination to violate the law) in the *Enforcement Uncertainty* subgroup than in the *Legal Uncertainty* subgroup. No statistically significant differences were detected between the *Civil Sanction* and the *Criminal Sanction* subgroups for any of the variables tested in the study.

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<sup>102</sup> MANCOVA and ANCOVA are similar procedures to MANOVA and ANOVA, respectively. The major difference is that MANCOVA and ANCOVA control for the influence of a supplementary independent variable (a covariate). These procedures allowed us to control for the influence of demographic factors in Studies II and III—that is, to ensure that any differences in results were due to the variables studied and not demographic factors like gender or level of religiosity.

<sup>103</sup> Nine participants were removed from the analysis, as they did not answer all relevant questions.

<sup>104</sup> Multivariate  $F(3, 143) = 4.81$ ,  $p < 0.01$ ,  $\eta^2 = 0.09$ .

<sup>105</sup> Multivariate  $F(3, 143) = 3.08$ ,  $p < 0.05$ ,  $\eta^2 = 0.06$ .

<sup>106</sup>  $F(1, 144) = 9.78$ ,  $p < 0.01$ ,  $\eta^2 = 0.06$ .

<sup>107</sup>  $F(1, 144) = 15.39$ ,  $p < 0.01$ ,  $\eta^2 = 0.10$ .

<sup>108</sup>  $F(1, 144) = 8.55$ ,  $p < 0.01$ ,  $\eta^2 = 0.06$ .

<sup>109</sup>  $F(1, 144) = 4.53$ ,  $p < 0.05$ ,  $\eta^2 = 0.03$ .

TABLE 3  
MEAN SCORES AND STANDARD DEVIATIONS (IN PARENTHESES)  
FOR ATTITUDES TOWARD MISCONDUCT AS A FUNCTION OF  
SANCTION TYPE AND UNCERTAINTY TYPE

<i>Dependent Variable</i>	<i>Civil Sanction</i>			<i>Criminal Sanction</i>		
	<i>Legal Uncertainty</i>	<i>Enforcement Uncertainty</i>	<i>Difference Test</i>	<i>Legal Uncertainty</i>	<i>Enforcement Uncertainty</i>	<i>Difference Test</i>
Perceived Morality	7.68 (2.11)	8.57 (1.87)	p < 0.05	7.54 (2.27)	8.71 (1.98)	p < 0.05
Perceived Social Desirability	7.27 (2.-22)	7.97 (2.29)	N/S	6.90 (2.45)	8.91 (1.62)	p < 0.01
Industry-Wide Noncompliance	3.27 (1.59)	3.05 (1.53)	N/S	3.41 (1.92)	3.53 (1.54)	N/S
Managerial Noncompliance	3.86 (2.71)	4.57 (2.98)	N/S	3.59 (2.31)	3.88 (2.64)	N/S
Attempt To Comply	7.51 (2.56)	7.10 (2.63)	N/S	7.04 (2.36)	8.50 (1.76)	p < 0.01
Willingness To Pay	6.57 (2.92)	6.60 (2.96)	N/S	5.40 (2.77)	7.94 (2.25)	p < 0.01
Intention To Violate the Law	0.73 (0.45)	0.70 (0.46)	N/S	0.61 (0.49)	0.94 (0.24)	p < 0.01

NOTE: The first six items were rated on a ten-point Likert scale. Higher values indicate more negative attitudes toward the misconduct, lower perceived prevalence of the misconduct, and lower inclination to perform the misconduct. The seventh variable, *Intention To Violate the Law*, was rated on a binary scale: 0 (yes) or 1 (no).

Most importantly, the univariate tests also indicated a significant interaction effect for three of the seven variables:<sup>110</sup> *Likelihood of Compliance*,<sup>111</sup> *Willingness To Pay for Compliance*,<sup>112</sup> and *Intention To Violate the Law*.<sup>113</sup> We detected a marginally significant interaction effect for *Perceived Social Desirability*.<sup>114</sup> That is, the differences we found between the categories were moderated by the type of uncertainty.

To understand the source of the variance, we conducted a separate ANCOVA for each sanction type's subgroup. This analysis indicated that under the *Criminal Sanction* condition, there were significant differences between the uncertainty-type subgroups for five of the seven variables: *Perceived Morality*, *Perceived Social Desira-*

<sup>110</sup> There is an interaction effect between two variables if "the effect of [the variables] together is different (greater or less) than their individual effects." FED. JUDICIAL CTR., REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 392 (2d ed. 2000), available at [http://www.fjc.gov/public/pdf.nsf/lookup/sciman00.pdf/\\$file/sciman00.pdf](http://www.fjc.gov/public/pdf.nsf/lookup/sciman00.pdf/$file/sciman00.pdf).

<sup>111</sup>  $F(1, 144) = 5.58, p < 0.05, \eta^2 = 0.04$ .

<sup>112</sup>  $F(1, 144) = 7.33, p < 0.05, \eta^2 = 0.05$ .

<sup>113</sup>  $F(1, 144) = 6.15, p < 0.05, \eta^2 = 0.04$ .

<sup>114</sup>  $F(1, 144) = 3.02, p = 0.08, \eta^2 = 0.02$ .

bility, *Attempt To Comply*, *Willingness To Pay*, and *Intention To Violate the Law*. Under the *Civil Sanction* condition, there was a significant difference between the uncertainty-type subgroups only for the *Perceived Morality* variable.

Table 4 reports the frequency distribution of participants as a function of their sanction type, intention to violate the law, and uncertainty type.

TABLE 4  
DISTRIBUTION OF PARTICIPANTS AS A FUNCTION OF SANCTION TYPE, INTENTION TO VIOLATE THE LAW, AND UNCERTAINTY TYPE

<i>Type of Sanction</i>	<i>Intention To Violate the Law</i>	<i>Legal Uncertainty</i>	<i>Enforcement Uncertainty</i>
Civil Sanction	Yes	13	12
	No	27	30
Criminal Sanction	Yes	15	3
	No	27	32

The chi-square test indicated that under the *Civil Sanction* condition, there was no dependency between the variables.<sup>115</sup> On the other hand, under the *Criminal Sanction* condition, a significant dependency emerged between the variables.<sup>116</sup> This was consistent with the ANCOVA result. Consistent with our hypothesis, only in the *Criminal Sanction* subgroup did we find a significant difference between the uncertainty-type subgroups in their intent to violate the law. In the *Legal Uncertainty* subgroup, the proportion of participants showing an inclination to violate the law (35.7%) was significantly higher than in the *Enforcement Uncertainty* subgroup (8.6%).

#### *E. Study III: Legal Probabilities and Morally Charged Situations*

In our third and final study, we asked whether causing harm to others affects the way in which people perceive legal probabilities. Exploring this question is a challenging task because one can present two competing hypotheses about the likely effects of legal uncertainty in such scenarios.

The first hypothesis stems from the process of motivated reasoning.<sup>117</sup> One possible psychological force driving the different reac-

<sup>115</sup>  $\chi^2(1, n = 82) = 0.02, p > 0.05$ .

<sup>116</sup>  $\chi^2(1, n = 77) = 6.41, p < 0.01$ .

<sup>117</sup> For a discussion of motivated reasoning and the law, see *supra* notes 67–76 and accompanying text.

tions to enforcement uncertainty and legal uncertainty is people's tendency to use self-serving reasoning to justify choices of action. Yet this way of reasoning is constrained by the factual setting in which it is conducted. For example, while one might be able to justify stealing a pencil worth ten cents from a friend, one will find it difficult to justify stealing ten cents from the friend's wallet.<sup>118</sup> Similarly, the effect of a legal prohibition may depend on the degree to which the law itself affects people's judgment of the morality of the act. If people have a clear judgment of the wrongfulness of the act notwithstanding the law, then we expect the effect of legal uncertainty to be diminished. For example, even if, hypothetically, there is some legal uncertainty regarding whether intentionally killing another person is covered by the criminal code, one would expect this uncertainty to have little effect on people's behavior since they view the act as wrongful regardless of the law's content. If, on the other hand, people do not view the regulated act as inherently wrong, then they will be more inclined to engage in motivated reasoning once legal uncertainty is introduced. For instance, legal uncertainty with respect to a technical aspect of the tax code might encourage people to use motivated reasoning in order to justify minimizing their tax liability if they see nothing inherently illegitimate with minimizing their tax payments.

The competing hypothesis, which stems from the vast literature on motivations for legal compliance, suggests that legal uncertainty may play a less significant role in situations that carry limited moral meaning.<sup>119</sup> As this literature points out, people do not obey the law merely because they fear sanctions; rather, the view of law as a moral authority causes people to obey it willingly.<sup>120</sup> Thus, if the law deals with a morally charged situation (e.g., stealing money from a friend or harming the environment), we expect uncertainty about the law's content to affect individuals' decisions significantly because people may infer moral vagueness from legal uncertainty. In contrast, if the law contains technical prohibitions that seem to lack specific moral value, we expect the role of legal uncertainty to be diminished because people in such situations do not view the law as a guide to their behavior.

For Study III we conducted the same analysis as in Study II. A two-way MANCOVA for the general measures of the study indicated that overall, the *Legal Uncertainty* subgroup significantly differed

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<sup>118</sup> Mazar et al., *supra* note 69, at 634 (“[Stealing a pencil] offers more possibilities to categorize the action in terms that are compatible with friendship (e.g., my friend took a pencil from me once; this is what friends do).”).

<sup>119</sup> See *supra* notes 60–62 for some of the classical works of this literature.

<sup>120</sup> See *supra* notes 61–62.

from the *Enforcement Uncertainty* subgroup.<sup>121</sup> It also indicated that the *No Damage* subgroup significantly differed from the *Damage* subgroup.<sup>122</sup> However, there was no significant interaction effect between the variables.

In table 5 we report the mean scores for perceived attitudes and reactions toward the misconduct as a function of the environmental context and the uncertainty type. In addition, table 5 presents the results of the subgroup analysis conducted separately for the environmental context conditions.<sup>123</sup>

TABLE 5  
MEAN SCORES AND STANDARD DEVIATIONS (IN PARENTHESES)  
FOR ATTITUDES TOWARD THE MISCONDUCT AS A FUNCTION OF  
ENVIRONMENTAL CONTEXT AND UNCERTAINTY TYPE

<i>Dependent Variable</i>	<i>No Damage</i>			<i>Damage</i>		
	<i>Legal Uncertainty</i>	<i>Enforcement Uncertainty</i>	<i>Difference Test</i>	<i>Legal Uncertainty</i>	<i>Enforcement Uncertainty</i>	<i>Difference Test</i>
Perceived Morality	6.28 (2.60)	6.61 (2.81)	N/S	8.33 (1.76)	8.55 (1.63)	N/S
Perceived Social Desirability	5.98 (2.38)	7.04 (2.72)	N/S	7.62 (1.80)	8.48 (1.44)	p < 0.05
Industry-Wide Noncompliance	3.11 (1.95)	3.41 (2.17)	N/S	3.40 (1.83)	4.06 (1.85)	p = 0.06
Managerial Noncompliance	3.43 (2.66)	4.43 (3.19)	N/S	3.27 (2.40)	4.56 (2.68)	p < 0.01
Attempt To Comply	5.96 (2.58)	6.68 (2.85)	N/S	7.93 (2.26)	8.12 (2.05)	N/S
Willingness To Pay	4.87 (2.57)	5.29 (3.12)	N/S	6.64 (2.96)	6.77 (2.71)	N/S
Intention To Violate the Law	0.50 (0.50)	0.57 (0.50)	N/S	0.73 (0.48)	0.85 (0.36)	N/S

NOTE: The first six items were rated on a ten-point Likert scale. Higher mean values indicate more negative attitudes toward the misconduct, lower perceived prevalence of the misconduct, and lower inclination to perform the misconduct. The seventh variable, *Intention To Violate the Law*, was rated on a binary scale: 0 (yes), 1 (no).

The univariate tests indicated a significant difference between the uncertainty-type subgroups for two of the variables: *Perceived Social Desirability*<sup>124</sup> and *Managerial Noncompliance*.<sup>125</sup> A marginally sig-

<sup>121</sup> Multivariate  $F(3, 181) = 4.28, p < 0.01, \eta^2 = 0.07$ .

<sup>122</sup> Multivariate  $F(3, 181) = 10.79, p < 0.01, \eta^2 = 0.15$ .

<sup>123</sup> Eleven participants were removed from the analysis, as they did not answer all relevant questions.

<sup>124</sup>  $F(1, 177) = 8.40, p < 0.01, \eta^2 = 0.04$ .

<sup>125</sup>  $F(1, 177) = 9.85, p < 0.01, \eta^2 = 0.05$ .

nificant effect was detected for *Industry-Wide Noncompliance*.<sup>126</sup> For these three variables, means were higher in the *Enforcement Uncertainty* subgroup than in the *Legal Uncertainty* subgroup. Thus, as expected, noncompliance was higher for the group faced with legal uncertainty than for the group faced with enforcement uncertainty.

The univariate tests also indicated a significant difference between the environmental context subgroups for five of the variables: *Perceived Morality*,<sup>127</sup> *Perceived Social Desirability*,<sup>128</sup> *Attempt To Comply*,<sup>129</sup> *Willingness To Pay*,<sup>130</sup> and *Intention To Violate the Law*.<sup>131</sup> For all of these variables, means were higher in the *Damage* subgroup than in the *No Damage* subgroup.

In addition, the gap between legal uncertainty and enforcement uncertainty was larger when the law was associated with morality than when it was not. Following the same approach we used in Study II, we conducted a separate ANCOVA for each of the environmental contexts. The split file analysis<sup>132</sup> indicated that in the *Damage* context, there were significant differences between the uncertainty-type subgroups for two of the variables: *Perceived Social Desirability* and *Managerial Noncompliance*. The uncertainty type also had a marginally significant effect on the *Industry-Wide Noncompliance* rate. In the *No Damage* context, there were no significant differences between the uncertainty-type subgroups for any of the variables tested in the study.

Table 6 displays the frequency distribution of the participants as a function of their environmental context, intention to violate the law, and uncertainty type.

The chi-square test indicates that in the *No Damage* context, there is a lack of dependency among the variables.<sup>133</sup> On the other hand, in the *Damage* context, a significant dependence emerged among the variables.<sup>134</sup> Consistent with our hypothesis, only in the *Damage* context was there a significant difference between the uncertainty-type subgroups in their intent to violate the law. In the *Legal Uncertainty* subgroup, the proportion of participants intending

<sup>126</sup>  $F(1, 177) = 3.43, p = 0.066, \eta^2 = 0.02$ .

<sup>127</sup>  $F(1, 177) = 30.00, p < 0.01, \eta^2 = 0.14$ .

<sup>128</sup>  $F(1, 177) = 18.70, p < 0.01, \eta^2 = 0.10$ .

<sup>129</sup>  $F(1, 177) = 20.06, p < 0.01, \eta^2 = 0.10$ .

<sup>130</sup>  $F(1, 177) = 11.06, p < 0.01, \eta^2 = 0.06$ .

<sup>131</sup>  $F(1, 177) = 13.13, p < 0.01, \eta^2 = 0.07$ .

<sup>132</sup> This procedure is used to examine the source of the interaction. In order to determine the subgroup for which the effect of source of uncertainty is greatest, we performed this analysis separately on participants in the *Damage* and *No Damage* contexts.

<sup>133</sup>  $\chi^2(1, n = 95) = 0.27, p > 0.05$ .

<sup>134</sup>  $\chi^2(1, n = 99) = 2.68, p < 0.05$ .

TABLE 6  
 DISTRIBUTION OF PARTICIPANTS AS A FUNCTION OF  
 ENVIRONMENTAL CONTEXT, INTENTION TO VIOLATE  
 THE LAW, AND UNCERTAINTY TYPE

<i>Environmental Context</i>	<i>Intention To Violate the Law</i>	<i>Legal Uncertainty</i>	<i>Enforcement Uncertainty</i>
No Damage	Yes	24	20
	No	24	27
Damage	Yes	15	7
	No	35	42

to violate the law (30.0%) was significantly higher than in the *Enforcement Uncertainty* subgroup (14.3%). It should be noted that the ANCOVA did not detect a significant difference for the *Damage* context between the uncertainty-type subgroups in their intention to violate the law. This finding can be explained by the dichotomous scale of the *Intention To Violate the Law* variable and the high standard deviations.<sup>135</sup>

### III

#### DISCUSSION AND POLICY IMPLICATIONS

Having presented data demonstrating the different effects of uncertain law and uncertain enforcement on our study participants' intention to violate the law and on their attitudes toward, and perception of the prevalence of, misconduct, we turn in this Part to discuss our results and their potential policy implications. Acknowledging the limitations of our study, we then propose areas for future research.

##### A. General Discussion

Our goal in writing this Article was to explore the ways in which different types of legal probabilities affect human behavior. We showed in a series of three experiments that the source of uncertainty affects the way people perceive situations and the way we can expect them to behave. In this Section, we summarize two main findings from our study and discuss a few possible interpretations and implications of the behavioral patterns we observed.

Two general conclusions can be drawn from our study. First, people treat uncertain enforcement and uncertain law differently.

<sup>135</sup> Because both uncertainty-type subgroups are highly dispersed and overlapping, it is difficult to determine whether a statistically significant difference exists between them.

Whereas enforcement uncertainty simply amounts to a reduction in the expected sanction, legal uncertainty undercuts the law's normative force and thus provides more leeway for people to justify self-interested behavior. For this reason, legal uncertainty can be expected to result in more noncompliance than can enforcement uncertainty. Second, the behavioral effects of legal probabilities depend to a large degree on both the legal and factual settings in which they are situated. Circumstances such as the type of legal regime in place or the nature of the activity being regulated may factor into how different legal probabilities interact to influence behavior.

There are several ways in which the behavioral patterns we documented can be interpreted. One interpretation is that we have managed to present empirical evidence of the expressive power of the law.<sup>136</sup> Under this interpretation, subjects in the different experiments did not view legal sanctions as a mere price they must pay in order to engage in harmful activities. Rather, our results suggest that the act of prohibiting a certain conduct holds expressive value independent of the price tag that the law attaches to the prohibition.

In this regard, the second and third studies offer more subtle insights into the expressive power of the law. The second study suggests that the noninstrumental function of law is greater when the legal payment is defined as a criminal sanction rather than a civil payment. This difference between the criminal and civil contexts demonstrates the additional expressive power of the criminal law and the greater importance of legal certainty in the criminal context. The findings of our third study shed new light on the limits of the law's expressive power.<sup>137</sup> As was evident in that study, not every legal prohibition carries an equal degree of expressive power. Rather, the law's expressive value is most noticeable in morally charged situations. On the other hand, when a legal prohibition is not tied to notions of morality, the law's expressive value is more limited.

A second interpretation of our findings is that the law lends itself to a process of motivated reasoning by those subject to it.<sup>138</sup> This interpretation emphasizes not the prohibitive nature of law but rather the legitimizing effect of behaving in accordance with it. Ex ante legal uncertainty allows people to justify their choices to themselves by

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<sup>136</sup> For a discussion of expressive theories of the law, see *supra* notes 52–58 and accompanying text.

<sup>137</sup> For a discussion of the limitations of expressive theories of law, see HANOCH DAGAN, *THE LAW AND ETHICS OF RESTITUTION* 104–05 (2004), which notes that an unreasonable or overly demanding legal norm can undermine law's expressive power.

<sup>138</sup> For a discussion of motivated reasoning and the law, see *supra* notes 67–76 and accompanying text.

focusing on the possibility that their acts may be deemed legal. Such an effect might be exacerbated by optimism bias as individuals systematically overestimate their ability to convince legal authorities that their interpretation of the law is accurate.<sup>139</sup> Enforcement uncertainty, on the other hand, cannot be mitigated by self-justification; as a result, people may view it as a mere reduction of the odds that they will pay a price for behaving in an undesirable way.

### B. Policy Implications

Thus far we have focused on the theoretical and abstract interpretations of our findings. We now turn to explore the implications for concrete policy issues. First, we discuss how policymakers might balance legal uncertainty against enforcement uncertainty. Second, we discuss the relevance of our findings to the ongoing debate on the use of rules versus the use of standards. Third, we assess the literature on legal advice, arguing that policymakers should pay close attention to the acts of lawyers given lawyers' unique role with respect to legal uncertainty. Lastly, drawing from the results of our third study, we argue that policymakers should be aware of the heightened importance of legal clarity in morally charged situations.

#### 1. Balancing Uncertain Law and Uncertain Enforcement

Perhaps the most obvious policy debate to which our study lends itself concerns the tradeoff between uncertain law and uncertain enforcement as policy tools aimed at enhancing compliance. While this question is general in nature, it has drawn the most attention in the tax compliance literature.<sup>140</sup> For example, in an influential article, Suzanne Scotchmer and Joel Slemrod designed a stylized model in

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<sup>139</sup> The optimism bias refers to the tendency of people to systematically underestimate the likelihood of negative events (e.g., the chance they will be involved in a car accident) and overestimate the likelihood of positive events (e.g., the chance their long-term earnings will be above average). For a recent review of the studies documenting this bias, see Sean Hannon Williams, *Sticky Expectations: Responses to Persistent Over-Optimism in Marriage, Employment Contracts, and Credit Card Use*, 84 NOTRE DAME L. REV. 733, 742–45 (2009). For examples of studies incorporating optimism bias into legal analysis, see, for example, Ron Harris & Einat Albin, *Bankruptcy Policy in Light of Manipulation in Credit Advertising*, 7 THEORETICAL INQUIRIES L. 431 (2006), and Avishalom Tor, *The Fable of Entry: Bounded Rationality, Market Discipline, and Legal Policy*, 101 MICH. L. REV. 482 (2002).

<sup>140</sup> See, e.g., Suzanne Scotchmer & Joel Slemrod, *Randomness in Tax Enforcement*, 38 J. PUB. ECON. 17 (1989) (formally framing policy debate); James Alm et al., *Institutional Uncertainty and Taxpayer Compliance*, 82 AM. ECON. REV. 1018 (1992) (using laboratory experiments to explore effect of uncertainty on tax compliance); James Andreoni et al., *Tax Compliance*, 36 J. ECON. LITERATURE 818, 852–53 (1998) (reviewing theoretical literature indicating uncertainty in tax system can increase compliance). For a recent reference to this debate within the legal literature, see Logue, *supra* note 38, at 250–51 & n.15, which

order to demonstrate that some level of uncertainty in the tax system can be optimal.<sup>141</sup> Consistent with traditional economic models, they implicitly assumed that the behavioral effects created by uncertain enforcement and uncertain law are identical.<sup>142</sup> This assumption, coupled with the assumption of risk aversion, allowed them to argue that increasing legal uncertainty will increase reported income and raise tax revenues.<sup>143</sup> Furthermore, because reducing legal uncertainty is costly (requiring, e.g., further specification of the code, training of auditors, etc.), Scotchmer and Slemrod argued that the optimal tax regime might be designed to have relatively high legal uncertainty coupled with low audit rates.<sup>144</sup>

Our findings, however, suggest that these claims need to be reexamined and refined. A large body of literature has dealt with the question of why people pay taxes.<sup>145</sup> While the traditional deterrence model for compliance is influential in the tax context,<sup>146</sup> much of the observed tax compliance cannot be explained by deterrence, given extraordinarily low audit rates.<sup>147</sup> Rather, such compliance can be explained as a result of people's willingness to contribute to the society in which they live once required to do so by law.<sup>148</sup> Yet, as we

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suggests that strategically increasing the uncertainty of the tax code can be leveraged as a policy tool.

<sup>141</sup> Scotchmer & Slemrod, *supra* note 140, at 28–29.

<sup>142</sup> *See id.* at 17–24.

<sup>143</sup> *Id.* at 19–24.

<sup>144</sup> *Id.* at 25–26.

<sup>145</sup> For an experimental exploration of the different incentives to pay taxes, see, for example, James Alm et al., *Why Do People Pay Taxes?*, 48 J. PUB. ECON. 21 (1992), which suggests that tax compliance stems from a variety of behavioral factors, including overestimating the likelihood of an audit and valuing the public goods funded by taxes.

<sup>146</sup> For the initial contribution to this literature, see Allingham & Sandmo, *supra* note 32, which provides a rational choice model of tax evasion that takes into account the probability of detection and sanction by tax authorities. For a recent review, see generally Joel Slemrod, *Cheating Ourselves: The Economics of Tax Evasion*, 21 J. ECON. PERSP. 25 (2007), which analyzes the causes, nature, and magnitude of tax evasion in the United States and concludes that deterrence is a powerful factor in evasion decisions.

<sup>147</sup> Alm et al., *supra* note 145, at 21–22.

<sup>148</sup> *See generally* James Alm et al., *Estimating the Determinants of Taxpayer Compliance with Experimental Data*, 45 NAT'L TAX J. 107 (1992) (using laboratory experiments to test effect of factors such as audit rates, penalties, and tax rates on individuals' compliance motivation, finding that compliance is greater when, inter alia, individuals perceive benefits from public goods funded by their tax payments); Winfried Becker et al., *The Impact of Public Transfer Expenditures on Tax Evasion: An Experimental Approach*, 34 J. PUB. ECON. 243 (1987) (reporting experimental study of effect of public sector transfer payments on tax-evasion behavior); Bruno S. Frey & Benno Torgler, *Tax Morale and Conditional Cooperation*, 35 J. COMP. ECON. 136 (2007) (providing survey data demonstrating that taxpayer compliance depends on perceived compliance of other taxpayers); Benno Torgler, *Tax Morale and Direct Democracy*, 21 EUR. J. POL. ECON. 525 (2005) (analyzing survey data to suggest that direct democratic rights have significantly positive effect on individuals' willingness to pay taxes); Michael Wenzel, *An Analysis of Norm Processes in*

have suggested, legal uncertainty might erode some of these nonlegal incentives to pay taxes. As a result, the use of legal uncertainty as a revenue-enhancing policy tool might turn out to be counterproductive, driving people to report lower incomes in part because they will be able to justify this act to themselves and might expect others to behave similarly. Thus, the importance of a clear tax code might be much greater than currently perceived by economists.

More generally, our findings can function as a behavioral explanation for the centrality of the principle of legality in criminal jurisprudence. This principle is perhaps the most basic tenet of criminal law,<sup>149</sup> standing for the proposition that all criminal prohibitions must be clearly defined by the legislature in advance.<sup>150</sup> In the United States, the principle may be applied through the vagueness doctrine, which requires that “crime definition be meaningfully precise—or at least that it not be meaninglessly indefinite.”<sup>151</sup> There are several justifications for the principle of legality. One group of justifications takes an institutional approach to the issue, arguing that criminal prohibitions should only be created by the branch of government that is politically accountable to the people.<sup>152</sup> A second group of justifications focuses on notice to potential criminals, arguing that it is unfair to punish people who were not given fair warning prior to committing the wrongful act.<sup>153</sup>

While we do not aim to quarrel with any of these justifications, our findings suggest an additional behavioral explanation for the doctrine and for its focus on *criminal* prohibitions. As we have seen, uncertainty creates an ideal setting for people who value themselves as law-abiding people to possibly justify, in their own eyes, not complying with the law. Furthermore, our findings showed that legal

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*Tax Compliance*, 25 J. ECON. PSYCHOL. 213 (2004) (demonstrating role of perceived social norms on tax compliance of Australian taxpayers). Tax scholars have recently incorporated these insights into the legal literature. See, e.g., Raskolnikov, *supra* note 19 (proposing reform in tax code to distinguish among taxpayers on basis of differing motivations to pay taxes).

<sup>149</sup> See HERBERT L. PACKER, *THE LIMITS OF THE CRIMINAL SANCTION* 79–80 (1968) (viewing principle of legality as “first principle” of criminal law).

<sup>150</sup> See John Calvin Jeffries, Jr., *Legality, Vagueness, and the Construction of Penal Statutes*, 71 VA. L. REV. 189, 190 (1985) (“The principle of legality . . . stands for the desirability in principle of advance legislative specification of criminal misconduct.”).

<sup>151</sup> *Id.* at 196.

<sup>152</sup> *Id.* at 202.

<sup>153</sup> *Id.* at 205. Recognizing that in practice, notice is not actually administered to provide fair warning (because, for instance, a statute may be facially vague—thus requiring research into judicial precedent for a more accurate understanding of the statute), Jeffries reconceptualizes notice as stemming from a more narrow concern for whether the ordinary law-abiding individual would have received some signal that her conduct *risks* violation of a law. *Id.* at 206–12.

uncertainty is especially counterproductive in the criminal setting, in which people look to the law for guidance. Thus, vague criminal prohibitions may undermine the self-enforcing aspects of criminal law and diminish compliance. Yet specifying criminal laws might be costly for politicians, either because of the time and effort required in order to achieve specificity or because of the political costs associated with creating prohibitions. Hence, judicial review of the level of legal uncertainty may be especially important, allowing courts to strike down prohibitions that are not sufficiently specified. This, in turn, would motivate legislatures to create clear criminal prohibitions. Moreover, the focus of the doctrine on criminal prohibitions might motivate legislatures to focus their marginal efforts on specifying criminal, rather than civil legislation, which is desirable given the larger expressive power of the law in that area.

To be sure, our claims in this regard should not be read as a call for broad legislative reform that would transform our entire legal terrain into highly specific, bright-line rules. Clearly, there are many good reasons to sustain legal uncertainty. Reducing uncertainty entails direct costs associated with drafting that are not always justifiable. Furthermore, creating broad, uncertain prohibitions might be helpful in dealing with strategic wrongdoers who design their acts in order to avoid specific prohibitions.<sup>154</sup> Hence, our conclusions are best seen as additional factors that legislatures should consider when making policy decisions.

## 2. *Rules Versus Standards*

A second policy debate to which our study is closely tied is that regarding the desirable balance between rules and standards in the legal system. Legal norms can be placed on a continuum of specificity. At one end of this continuum lie standards, which include open-ended terms such as “reasonable care” and “good faith.”<sup>155</sup> These general terms require discretion on the part of an adjudicator for their application to the specific fact pattern of each case. Rules, on the other hand, are much more specific in nature. They include detailed provisions that attempt to anticipate different fact patterns in advance, leaving little room for discretion by an adjudicator.

Rules and standards differ with respect to the level of uncertainty they generate for potential wrongdoers. Standards are inherently

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<sup>154</sup> See Samuel W. Buell, *The Upside of Overbreadth*, 83 N.Y.U. L. REV. 1491, 1497–526 (2008) (discussing tradeoffs legal policymakers face when trying to decide on optimal breadth of law).

<sup>155</sup> For further discussion of the behavioral mechanisms that underlie how individuals interpret standards, see Feldman & Harel, *supra* note 20, at 88–90.

vague because they rely on ex post adjudication that may be difficult to predict ex ante. Rules, on the other hand, create more certainty because a potential wrongdoer can evaluate her acts in light of the detailed provisions of the rule and predict with some confidence whether her acts fit the fact pattern covered by the rule. For example, think of the decision an employer must make with respect to installing a new safety measure in the workplace. If safety issues are governed by a negligence standard, the employer can only roughly estimate ex ante the probability that not installing the measure will be deemed by a court to constitute negligence. If, however, the regime is based on rules specified in a safety code, the employer faces less uncertainty as to its obligations under the law.

Legal economists view the choice between rules and standards as one that is governed by cost-benefit considerations.<sup>156</sup> In this regard, they take account of costs such as that of legislating a rule ex ante (higher for rules, lower for standards); the costs to individuals of acquiring information on the law (lower for rules, higher for standards); and the costs of enforcing the law ex post (lower for rules, higher for standards).<sup>157</sup> Generally, the conclusion of this analysis is that as the frequency of an activity increases, it becomes more desirable to adopt rules because the relatively higher cost associated with creating rules ex ante is offset by the lower cost of enforcing them ex post.<sup>158</sup> In cases where a law will be applied only rarely, however, standards may be desirable: The costlier, but infrequent, ex post adjudication of standards is justified by the lower costs of legislating standards up front.<sup>159</sup>

Our study sheds new light on this issue, suggesting an additional difference between rules and standards that should be incorporated into the analysis. As we have seen, legal uncertainty may give individuals room to convince themselves that they are acting in accordance with uncertain standards. Setting bright-line rules may thus be more desirable than previously believed, for such rules can diminish the effi-

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<sup>156</sup> See, e.g., Isaac Ehrlich & Richard A. Posner, *An Economic Analysis of Legal Rulemaking*, 3 J. LEGAL STUD. 257 (1974) (examining optimal specificity of legal commands from economic perspective); Louis Kaplow, *Rules Versus Standards: An Economic Analysis*, 42 DUKE L.J. 557 (1992) (suggesting efficiency-driven argument for optimal specificity of legal rules).

<sup>157</sup> See, e.g., Kaplow, *supra* note 156, at 568–70 (comparing costs of rules and standards at each of three stages of promulgation, compliance, and enforcement).

<sup>158</sup> See, e.g., *id.* at 577 (“In summary, the greater the frequency with which a legal command will apply, the more desirable rules tend to be relative to standards.”).

<sup>159</sup> See *id.* (concluding that because rules cost more to promulgate while standards cost more to enforce, rules are more desirable where enforcement occurs more frequently).

cacy of any possible motivated reasoning by decisionmakers, thereby encouraging them to conduct more objective analyses of situations.

As a related matter, our findings offer an additional explanation for a puzzling question: Why do we observe systematic violations of legal standards?<sup>160</sup> From an economic perspective, the expected level of violations of optimally designed standards is zero: From the standpoint of potential wrongdoers, it is irrational to violate such legal standards. A well-functioning negligence regime, for example, is expected to give people incentives to *always* take optimal care by setting the standard of care at an economically efficient level.<sup>161</sup> Nonetheless, there is ample evidence that people quite often behave negligently.<sup>162</sup>

Traditional explanations for the existence of violations of standards focus on two main dimensions.<sup>163</sup> The first concerns problems associated with the legal system. To the extent that the legal system is not designed in an optimal fashion (e.g., the legal standard is set at an inappropriate level, enforcement is uncertain, damages are too low, etc.), one would expect to observe rational parties choosing to deviate from the legal standard.<sup>164</sup> The second explanation for the existence of violations of standards concerns deviations from the rational choice model. If people are subject to an array of cognitive biases that affect their decisions, then these biases might cause them to violate a legal standard even though the violation is not in their best interest.<sup>165</sup>

While all of these explanations remain valid, a complementing explanation suggested by our findings is that the uncertainty created by standards such as negligence encourages people to violate them.

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<sup>160</sup> See Mark F. Grady, *Why Are People Negligent? Technology, Nondurable Precautions, and the Medical Malpractice Explosion*, 82 Nw. U. L. REV. 293, 294 (1988) (noting that under economic theory of tort, existence of negligence claims is puzzling because “courts impose liability only when the defendant has stopped at a point where further doses of precaution would still cost less than the value of the reduced risk they yield” and therefore “everyone . . . should find it cheaper to use the precaution necessary to avoid liability”).

<sup>161</sup> WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF TORT LAW* 72 (1987).

<sup>162</sup> Grady, *supra* note 160, at 294 (noting that “courts are . . . finding people negligent” and describing “alarming” increase in claims against medical specialists). For a discussion of why one would expect a positive number of negligence cases even if all parties are rational economic maximizers, see LANDES & POSNER, *supra* note 161, at 72–73.

<sup>163</sup> See, e.g., Steven P. Croley, *Vicarious Liability in Tort: On the Sources and Limits of Employee Reasonableness*, 69 S. CAL. L. REV. 1705, 1726–30 (1996) (reviewing different explanations for existence of negligence).

<sup>164</sup> See *id.* at 1726–27 (suggesting acts of negligence may be explained by possibility that courts may mistakenly find negligence, that those with below average capacities may be found negligent under reasonable person standard, or that parties engage in negligent conduct in hopes that courts will wrongly conclude they were not negligent).

<sup>165</sup> See *id.* at 1724 n.70 (illustrating how cognitive biases affect individual behavior involving imposition of tort risks).

Rules cause people to face a clear dilemma between obeying and disobeying the law. Standards, on the other hand, allow parties to view their choices *ex ante* as ones that may be determined by an adjudicator *ex post* to be non-negligent and therefore legal. This “window of legality” might attract some people to behave in a way that is not in accordance with the standard.

### 3. *Legal Advice*

A third body of literature to which our study contributes is that dealing with legal advice. Legal advice is information that individuals buy from lawyers regarding the content of the law. Under this framework, individuals can choose to reduce legal uncertainty as to their potential liability by investing resources in buying advice.<sup>166</sup> For example, a lawyer might be able to provide her clients with advice as to the meaning of the negligence standard in a certain setting, the application of a statute to a contemplated behavior, or the tax liability generated by a certain transaction.

Legal economists have long modeled the incentives of individuals to acquire legal advice, as well as the social value of this advice.<sup>167</sup> Generally, these models are extensions of economic models of the value of information to decisionmakers.<sup>168</sup> According to this framework, individuals acquire legal advice only if its expected value exceeds its costs. The expected value of legal advice is calculated by multiplying the probability that the advice will lead a party to alter her behavior by the benefit gained from the altered behavior.<sup>169</sup> Steven Shavell illustrates this calculation through the following example: A factory owner can save \$3000 by pouring a chemical into a river, but the fine for this act is \$5000. The factory owner will choose to pour

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<sup>166</sup> To be sure, legal advice can relate to other aspects of people’s decisions to engage in regulated activities—for example, the magnitude of liability. In this study, however, we focused solely on uncertainty relating to liability; therefore, we limit the analysis to this point alone.

<sup>167</sup> For an early contribution to this literature, analyzing decisions to obtain legal advice and whether such advice results in socially desirable changes in behavior, see Steven Shavell, *Legal Advice About Contemplated Acts: The Decision To Obtain Advice, Its Social Desirability, and Protection of Confidentiality*, 17 J. LEGAL STUD. 123 (1988) [hereinafter Shavell, *Contemplated Acts*]. For a later review of the literature, providing an overview of issues related to the provision of legal advice such as the private and social values of *ex ante* and *ex post* legal advice, see generally Steven Shavell, *Legal Advice*, in 2 THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 516 (Peter Newman ed., 1998) [hereinafter Shavell, *Legal Advice*].

<sup>168</sup> See, e.g., HOWARD RAIFFA, *DECISION ANALYSIS: INTRODUCTORY LECTURES ON CHOICES UNDER UNCERTAINTY* 157–72 (1968) (modeling value of information for decisionmakers in situations of uncertainty).

<sup>169</sup> Shavell, *Contemplated Acts*, *supra* note 167, at 127.

the chemical as long as she believes that the probability of being fined is below 60% (because the expected sanction ( $0.6 \times \$5000 = \$3000$ ) is smaller than the gain from the act). Assuming that the factory owner's subjective valuation of illegality is 40%, it will be beneficial for her to invest up to \$800 in legal advice ( $\$2000 \times 0.4 = \$800$ ) that might inform her about the illegality of pouring the chemical into the river. Under these conditions, there is a 40% chance that the advice will inform her that the act is in fact illegal, saving her a net cost of \$2000 (the \$5000 fine minus the \$3000 in saved costs), and a 60% chance that the advice will be worthless because it will inform her about the legality of the act and not alter her behavior.<sup>170</sup>

While economic models capture many of the incentives that an individual has to acquire legal advice,<sup>171</sup> our findings suggest that other factors may also affect this decision. As noted earlier, the theory of motivated reasoning suggests that when there is legal uncertainty, decisionmakers may find it easier to reach a particular result while also justifying it to themselves.<sup>172</sup> Unlike in the case of enforcement uncertainty, actors in a legally uncertain context can take comfort in being seen as honestly misinterpreting an ambiguous statute rather than as purposely acting inappropriately.<sup>173</sup> This theory may also apply to legal advice. For example, when individuals easily can rationalize not seeking legal advice, they may not seek such advice in order to sustain uncertainty, even in situations in which economic models would predict the opposite result.<sup>174</sup>

Our results also suggest that even if the expected legal sanction is identical, the value of legal advice might be different in the criminal and civil contexts because people are especially susceptible to taking advantage of legal uncertainty in the criminal context.<sup>175</sup>

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<sup>170</sup> *Id.* at 125–28.

<sup>171</sup> *See, e.g., id.* at 126–30 (assuming implicitly that uncertainty with respect to tax laws and audit rates is fungible for purposes of decisionmaking calculation).

<sup>172</sup> *See supra* Part I.B.3.

<sup>173</sup> For a discussion of motivated reasoning as one possible explanation for our findings, see *supra* text accompanying notes 138–39.

<sup>174</sup> We should make clear that we do not believe that such individuals decide not to seek legal advice based on a fully thought-out cognitive process. Rather, under motivated reasoning, “people do not realize that the [justification construction] process is biased by their goals.” Kunda, *supra* note 67, at 483. Further, motivated reasoning does not suggest that individuals would recklessly disregard the need to obtain legal advice, because in such situations the omission could not be justified to a dispassionate observer. *See, e.g., id.* (“The biasing role of goals is . . . constrained by one’s ability to construct a justification for the desired conclusion: People will come to believe what they want to believe only to the extent that reason permits.”).

<sup>175</sup> *See supra* notes 102–05 and accompanying text (noting that in Study II, effect of legal uncertainty was much greater in criminal than in civil context).

Finally, while economic models focus on the desire of decisionmakers to *reduce* uncertainty,<sup>176</sup> our findings suggest that in some cases, individuals might have an incentive to seek legal advice in order to *increase* uncertainty. According to this hypothesis, legal advice can create uncertainty where no such uncertainty existed beforehand. For example, a lawyer might be able to employ a creative yet unrealistic interpretation of the law according to which a certain transaction is not taxable. In such situations, legal advice has both a potential instrumental value (as it creates the possibility of launching a reliance defense)<sup>177</sup> and a noninstrumental value (as it diminishes the expressive power of the law and allows individuals to feel as if they are complying with the norm).

#### 4. *Areas in Which Legal Clarity Is Critical*

As a final policy implication of our study, the results of our third experiment can be used by policymakers in determining the settings in which to focus their efforts to specify and clarify the law. Those results suggest that the role of clarity is of relatively high importance in settings that are morally charged.<sup>178</sup> Thus, while one might speculate that there is no need for legal specificity in morally charged situations (because people will be guided by their moral intuitions regardless of the content of the law), our findings suggest that when the situation is morally ambiguous, legal uncertainty may reduce compliance either by eroding the law's expressive power or by allowing people to engage in motivated reasoning. Conversely, in less morally charged settings, because the law's expressive power is more limited, we expect that people will view the law instrumentally and that the importance of legal specificity will be diminished. As a result, in these settings there will be less difference between the effects of legal uncertainty and enforcement uncertainty. In less morally charged areas, therefore, policymakers should concentrate not on legal clarity but rather on designing efficient enforcement regimes.

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<sup>176</sup> See, e.g., Shavell, *Legal Advice*, *supra* note 167, at 517 (reviewing literature and noting that “the private value of legal advice is the expected value of the private gain from possible changes in a party’s decision”).

<sup>177</sup> Reliance on legal advice might create a legal defense depending on the circumstances of the situation. See Zathrina Perez et al., *Securities Fraud*, 45 AM. CRIM. L. REV. 923, 969–70 (2008) (describing conditions for invoking reliance on “advice of counsel” defense).

<sup>178</sup> See *supra* Part II.E.

### C. *Limitations and Future Research*

In this final subsection, we evaluate potential criticisms of this project. We outline the limitations of our results and sketch out additional research that could help address these limitations.

First, one should recognize the general limitations of the methodology used in this study. Responses were measured according to attitude scales. Given the extensive literature on the complexity of the attitude-behavior relationship,<sup>179</sup> one ought to be careful not to overstate this study's findings, especially in the context of the expressive aspects of participants' behavior. After all, it is relatively easy to express different values when no price tag is attached to the expression. Because participants in our study did not face real monetary incentives, their answers might be biased toward overstating the expressive power of the law. Thus, future research should attempt to overcome this problem by including monetary incentives for participants. Nevertheless, numerous studies have documented the validity of using intention as a proxy for behavior.<sup>180</sup> Thus, we expect that the current pattern of findings will be replicated using other methodologies.

Second, because the legal and enforcement uncertainties used in our study were set to fixed values, our ability to argue for a general difference between legal and enforcement uncertainty is limited. Given different probabilities, actors might respond to these two uncertainty types differently. One explanation for this hypothesis stems from the process of motivated reasoning. As we saw, motivated reasoning is constrained by the situation in which it is conducted. One can speculate that as the probability of illegality rises, the ability to justify behavior that does not accord with the expected legal norm will diminish. If that is the case, the size of the uncertainty is expected to affect the willingness to engage in the harm-generating behavior.

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<sup>179</sup> See, e.g., Yuval Feldman, *Attitudes and Behavior*, in 1 ENCYCLOPEDIA OF LAW & SOCIETY: AMERICAN AND GLOBAL PERSPECTIVES 102 (David S. Clark ed., 2007) (describing different arguments made to account for failure of attitudes to predict behavior).

<sup>180</sup> E.g., Ajzen, *supra* note 82, at 15–18 (discussing empirical research on “theory of reasoned action” that demonstrates ability to predict behavior based on intention); Icek Ajzen & Martin Fishbein, *The Influence of Attitudes on Behavior*, in THE HANDBOOK OF ATTITUDES 173, 187–96 (Dolores Albarracín et al. eds., 2005) (providing detailed overview of research substantiating predictive validity of behavioral intentions, including theory of reasoned action and theory of planned behavior); Icek Ajzen & Nicole Gilbert Cote, *Attitudes and the Prediction of Behavior*, in ATTITUDES AND ATTITUDE CHANGE 289, 303 (William D. Crano & Radmila Prislin eds., 2008) (reviewing various empirical studies showing that specific behaviors could be predicted based on corresponding intentions).

Thus, it would be interesting for future research to replicate this study with different levels of uncertainty.

Third, while in the second experiment a significant interaction emerged between the type of sanction and the source of uncertainty,<sup>181</sup> this was not the case for the third experiment, in which we examined the effect of adding a moral dimension to the situation.<sup>182</sup> The lack of a significant interaction effect in the third experiment might be explained by the fact that there are two competing theoretical mechanisms driving in opposing directions. Thus, while the relatively weaker effect might have been expected, the weakness of the current pattern should be recognized. Clearly, without an interaction, the differences that emerged in the subgroup analysis between the two conditions should not be overstated. Future research should replicate this study, making minor modifications to account for factors such as social motivation and likely guilt from violating the law.

Fourth, the sample used in this study consisted exclusively of law students whose reactions to legal uncertainty might not represent those of the general population. For example, law students might be more risk seeking with respect to legal uncertainty than the general population because they may view it as a natural phenomenon with which they are familiar. From this perspective, we expect to see a larger willingness to exploit legal uncertainty among law students. On the other hand, the law might hold greater expressive power in the eyes of law students because they may care more about their own image as law-abiding people. Thus, we expect to see a smaller willingness to act contrary to an uncertain legal norm among law students. It will be both interesting and useful to rerun our experiments on subjects without a legal education and examine whether they perceive different types of uncertainty differently than did the participants in our study.

A separate set of questions that we leave for future research concerns the further taxonomy of uncertainty types. In our study, the sole source of legal uncertainty was the language of the law. Nonetheless, as we noted, there are additional sources of legal uncertainty, such as legal standards.<sup>183</sup> Similarly, there might be distinct social meanings associated with the various probabilistic decisions made by

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<sup>181</sup> See *supra* notes 110–14 and accompanying text (identifying variables for which interaction effect was observed).

<sup>182</sup> See *supra* notes 121–22 and accompanying text (noting lack of interaction).

<sup>183</sup> See Feldman & Harel, *supra* note 20, at 82 (characterizing legal standards as “less specific [than rules], articulating open-ended tests whose precise content is only revealed *ex post*” and which may be “phrased in vague terms such as ‘good faith’ or ‘unfair competition’”).

different players in the legal system that contribute to enforcement uncertainty. For example, the effect of a ten percent chance that a prosecutor will not bring charges due to a large caseload might be different from the effect of a ten percent chance that a jury will decide to acquit a defendant.<sup>184</sup>

### CONCLUSION

We began this paper by describing the traditional economic theory regarding probabilistic sanctioning regimes. According to this theory, potential wrongdoers treat different types of legal probabilities much like a gambler treats a series of bets at the casino—they simply multiply them as if they were fungible in order to derive the expected sanction. Using a series of experiments, we demonstrated that legal probabilities are not fungible. Rather, an array of factors relating to the source of uncertainty and the setting in which it is located cause people to treat different legal probabilities distinctly. These distinctions in turn generate behavioral predictions that differ from traditional deterrence models and shed new light on a variety of policy debates.

The general picture that emerges from our results is a complex network of relationships between law, social norms, and internal motivations. These nuances and complexities are not currently part of deterrence models employed by legal economists. Nonetheless, it should be noted that our goal in this study, and others related to it, is not simply to criticize or undermine these models. Rather, it is to create a richer and ultimately more accurate model of the relationship between law and human behavior. Incorporating our empirical findings into existing models can help policymakers optimize their use of the legal tools at their disposal.

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<sup>184</sup> Note that while the question we pose in the text could be of analytical interest, it will be extremely difficult to measure empirically. A decision of a prosecutor not to press charges eliminates the need for trial. Since the ordeal of a trial might deter people independently of the sanction imposed (if imposed), comparing the two probabilities could prove to be a thorny task.