ARTICLE

"IDEOLOGY" OR "SITUATION SENSE"? AN EXPERIMENTAL INVESTIGATION OF MOTIVATED REASONING AND PROFESSIONAL JUDGMENT

DAN M. KAHAN,[α] DAVID HOFFMAN,[β] DANIELI EVANS,[χ] NEAL DEVINS,[δ] EUGENE LUCCI,[π] AND KATHERINE CHENG[σ]

*This Article reports the results of a study on whether political predispositions influence judicial decisionmaking. The study was designed to overcome the two principal limitations on existing empirical studies that purport to find such an influence: the use of nonexperimental methods to assess the decisions of actual judges; and the failure to use actual judges in ideologically-biased-reasoning experiments. The study involved a sample of sitting judges (*n = *253), who, like members of a general public sample (*n = *800), were culturally polarized on climate change,*

α Elizabeth K. Dollard Professor of Law and Professor of Psychology, Yale Law School.

β Murray H. Shusterman Professor of Transactional and Business Law, Temple University Beasley School of Law.

χ Senior Fellow, National Constitutional Center and Analyst, Cultural Cognition Lab.

δ Goodrich Professor of Law, Cabell Research Professor, and Professor of Government, William & Mary Law School.

π Judge, Ohio Court of Common Pleas.

σ Lab Member, Cultural Cognition Project, Yale Law School.

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*marijuana legalization and other contested issues. When the study subjects were assigned to analyze statutory interpretation problems, however, only the responses of the general-public subjects and not those of the judges varied in patterns that reflected the subjects' cultural values. The responses of a sample of lawyers (*n = *217) were also uninfluenced by their cultural values; the responses of a sample of law students (*n = *284), in contrast, displayed a level of cultural bias only modestly less pronounced than that observed in the general-public sample. Among the competing hypotheses tested in the study, the results most supported the position that professional judgment imparted by legal training and experience confers resistance to identity-protective cognition—a dynamic associated with politically biased information processing generally—but only for decisions that involve* legal *reasoning. The scholarly and practical implications of the findings are discussed.*

INTRODUCTION

Are judges politically motivated? Do they make decisions, at least in ideologically charged cases, on the basis of "policy preferences" or predispositions?

Most members of the American public think so. Opinion polls suggest that about three-quarters of Americans believe that judges—U.S. Supreme Court Justices and lower court jurists alike—base their decisions on their "personal political views."[1] The charge that judges are "legislating from the bench" is automatic after decisions involving culturally contested matters—from gay rights to gun control, affirmative action to stem cell research.[2] If a

1 *See, e.g.*, DAVID ROTHMAN, TRUST AND CONFIDENCE IN THE CALIFORNIA COURTS 32 (2005), http://www.courts.ca.gov/documents/4_37pubtrust1.pdf [http://perma.cc/QY7U-M9BE] ("Overall, outcomes are seen by all respondents as least fair for persons who are low-income or who do not speak English."); Kathleen Hall Jamieson & Bruce Hardy, *Public Understanding of and Support for the Courts: Annenberg Public Policy Center Judicial Survey Results*, ANNENBERG PUB. POL'Y CENT. (Oct. 17, 2007), http://www.annenbergpublicpolicy center.org/wp-content/uploads/Judicial_Findings_10-17-20071.pdf [http://perma.cc/FG9B-YG3S] ("75% of Americans think that a state judge's ruling is influenced by his or her politics to a great or modest extent . . . ."); *Opinions of the Supreme Court*, N.Y. TIMES (June 7, 2012), http://www.nytimes.com/interactive/2012/06/08/us/politics/ opinions-of-the-supreme-court.html [http://perma.cc/K6XY-VLVE] (summarizing a survey in which 76% of respondents believed that Supreme Court justices "sometimes let personal or political views influence their decisions"). *See generally* KEITH J. BYBEE, ALL JUDGES ARE POLITICAL—EXCEPT WHEN THEY ARE NOT: ACCEPTABLE HYPOCRISIES AND THE RULE OF LAW 8, 112-13 (2010) (collecting and summarizing survey results indicating that "[t]he notion that state judges are political is indeed commonly held").

2 *See, e.g.*, Ramesh Ponnuru, Editorial, *When Judicial Activism Suits the Right*, N.Y. TIMES, June 23, 2009, at A29 (suggesting that "[j]udicial restraint has also been absent" in cases striking down

judge rules against an African-American plaintiff suing white officers for police brutality, or a female criminal defendant asserting the "battered woman defense," the decision betrays "bias," rank or implicit;[3] if the judge rules the other way, then he or she is castigated for engaging in identity politics.[4]

Experts also share the public's assessment. Using multivariate regression models, some purport to measure the quantity of variance in case outcomes explained by judges' ideologies.[5] Others find evidence for judicial partisanship in experiments that demonstrate the impact of subconscious ideological predispositions on members of the public, including law students.[6] The evidence, according to the experts, vindicates the public's

affirmative action plans); Editorial, *Wrong Direction on Stem Cells*, N.Y. TIMES, Aug. 24, 2010, at A20 ("In a huge overreach, a federal judge has decided that the legal interpretation that has governed federal support of embryonic stem cell research for more than a decade is invalid."); Daniel Wilson, *Lawmakers Want Same-Sex Marriage Laws In State Hands*, LAW360 (Feb. 11, 2015, 6:51 PM), http://www.law360.com/articles/620597/lawmakers-want-same-sex-marriage-laws-in-state-hands [http://perma.cc/YEE4-AG6A] (noting that supporters of state legislation banning same-sex marriage "were struggling against 'activist court judges overstepping their constitutional authority by legislating from the bench'"); D. Robert Worley, *Judicial Activism and the Second Amendment*, HUFFINGTON POST (Jan. 4, 2013, 6:37 PM), http://www.huffingtonpost.com/d-robert-worley/judicial-activism-and-the_b_2412471.html [http://perma.cc/8ZEE-V7LS] (arguing that the modern interpretation of the Second Amendment is a product of judicial activism).

3 *See, e.g.*, Alex S. Vitale, *Why Police Are Rarely Indicted for Misconduct*, AL JAZEERA AM. (Nov. 24, 2014, 10:00 PM), http://america.aljazeera.com/opinions/2014/11/ferguson-police-misconductdarrenwilsongrandjury.html [http://perma.cc/KT6U-QPBQ] (arguing that racial attitudes stifle judicial regulation of police violence against minorities); Miranda S. Spivak, *Marissa Alexander's Supporters Converge in Florida*, WOMENSEWS (Jan. 26, 2015), http://womensenews.org/story/domestic-violence/150124/marissa-alexanders-supporters-converge-in-florida [http://perma.cc/LLG8-FSKQ] ("[A] lot of women face [imprisonment] for defending themselves [against domestic violence] . . . .").

4 *See* JAMES Q. WILSON, MORAL JUDGMENT: DOES THE ABUSE EXCUSE THREATEN OUR LEGAL SYSTEM? 44-70, 111-12 (1997) (arguing that the battered-woman defense is an example of the law's receptivity to "excusing accountability for some group defined by their group membership"); *The New York Stop and Frisk Law: Judicial Activism*, MYREALITYLAW.ORG (Aug. 14, 2013) http://www.myrealitylaw.org/the-new-york-stop-and-frisk-law-judicial-activism/ [http://perma.cc/Z3NA-3RPA] (characterizing a judge as "legislat[ing] from the bench" and engaging in "judicial activism" in upholding a constitutional challenge to police stop-and-frisk policy).

5 *See generally* LEE EPSTEIN, WILLIAM M. LANDES & RICHARD A. POSNER, THE BEHAVIOR OF FEDERAL JUDGES: A THEORETICAL AND EMPIRICAL STUDY OF RATIONAL CHOICE (2013) (attempting to characterize judges' decisions based on ideological scores); JEFFREY ALLAN SEGAL, HAROLD J. SPAETH & SARA CATHERINE BENESH, THE SUPREME COURT IN THE AMERICAN LEGAL SYSTEM (2005) (conducting studies on state and federal judges in an attempt to explain their decisionmaking in different ideological categories).

6 *See, e.g.*, EILEEN BRAMAN, LAW, POLITICS, AND PERCEPTION: HOW POLICY PREFERENCES INFLUENCE LEGAL REASONING 4-5 (2009) (suggesting that even judges who believe they are acting objectively are "predisposed to find authority consistent with their attitudes more convincing than cited authority against desired outcomes"); Eileen Braman & Thomas E. Nelson, *Mechanism of Motivated Reasoning? Analogical Perception in Discrimination Disputes*, 51 AM. J.

impression that judges (despite their own protestations to the contrary) are just "junior varsity politicians."[7]

We disagree—not necessarily with the conclusion that judges are "politically biased," but with the premise that existing empirical evidence furnishes secure grounds for crediting it. Popular judgments obviously are not conclusive: because members of the public lack legal training (indeed, lack comprehension of even the most rudimentary elements of the legal system),[8] they necessarily are incapable of reliably assessing the validity of judicial decisions. Inferences from experiments involving members of the public—including law students—are suspect for exactly the same reason: because the subjects in such studies *are* members of the public, their vulnerability to unconscious ideological predispositions begs the question of whether the training and experience that judges possess immunizes them from such influences when they are engaged in legal reasoning.[9]

Observational studies that purport to correlate the decisions of real judges with those judges' "ideologies" have also been reasonably criticized for methodological problems. One is the obvious selection bias involved in

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POL. SCI. 940, 940 (2007) ("[L]egal training did not appear to attenuate motivated perceptions."); Eric Posner & Cass Sunstein, *Institutional Flip-Flops* (Chi. Pub. Law and Legal Theory Working Paper No. 501, 2015), http://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=1953&context=public_law_and_legal_theory [https://perma.cc/2Z9X-26ZH] (positing that short-term political commitments cloud decisionmakers' long-term complex values).

7 *See, e.g.*, *Book Discussion on* Making Our Democracy Work: A Judge's View, C-SPAN (Sept. 13, 2010), http://www.c-span.org/video/?297408-1/book-discussion-making-democracy-work-judges-view [http://perma.cc/ZPC2-5EBT] (interview with Justice Stephen Breyer) (cited material at 24:42 of video) (rejecting view that Supreme Court consists of "nine junior varsity politicians"). Although there does appear to be growing public consensus that the U.S. Supreme Court and other courts are "political," whether judges are "too liberal" or "too conservative" is an issue that generally divides ordinary Americans in patterns characteristic of partisan divides on contentious issues. *Supreme Court's Favorable Rating Still at Historic Low: Few Conservatives View the Roberts Court as Conservative*, PEW RES. CTR. (Mar. 25, 2013), http://www.people-press.org/2013/03/25/ supreme-courts-favorable-rating-still-at-historic-low/ [http://perma.cc/ Z8DC-94LE] (noting that Republicans tend to see the Supreme Court's rulings as "liberal" while Democrats tend to see them as "conservative").

8 *See, e.g.*, Jamieson & Hardy, *supra* note 1 (finding that less than one-third of the American public knows that U.S. Supreme Court rulings cannot be appealed).

9 *See* Dan M. Kahan, *Laws of Cognition and the Cognition of Law*, COGNITION, Feb. 2015, at 56, 59-60 [hereinafter Kahan, *Cognition of Law*] (noting that studies examining influences of motivated cognition on legal reasoning are not based on judges); Dan M. Kahan, *The Supreme Court 2010 Term—Foreword: Neutral Principles, Motivated Cognition, and Some Problems for Constitutional Law*, 126 HARV. L. REV. 1, 27-28 (2011) [hereinafter Kahan, *Neutral Principles, Motivated Cognition*] (noting that it is a mistake to infer vulnerability of public to motivated reasoning generalizes to judges).

studying only cases that are actually litigated.[10] Another is the failure of researchers to specify the measured outcome variable in a manner that distinguishes the illicit contribution of political sensibilities *extrinsic* to law from the licit contribution of political sensibilities *intrinsic* to conventional legal reasoning.[11] These methodological shortcomings, critics assert, raise doubts about the strength of the inferences that can be drawn from these studies.

The most satisfactory way to overcome these limitations, we believe, is through valid experiments performed on judges.[12] In this Article, we present the results of such an experiment. In this study, judges, lawyers, and law students were instructed to assess legal problems designed to trigger unconscious political bias in members of the general public.

The experimental results furnished evidence strongly at odds with the conclusion that judges are influenced by political predispositions when they engage in legal reasoning. Judges of diverse cultural outlooks—ones polarized on their views of the risks of marijuana legalization, climate change, and other contested issues—converged on results in cases that strongly divided comparably diverse members of the public. Culturally diverse lawyers also displayed a high degree of consensus in their legal determinations. Law students, in contrast, did not; in addressing the legal problems featured in the experiment, they polarized along the same lines that divided the legally untrained members of the public, although to a lesser extent.

These results strongly support the hypothesis that *professional judgment* can be expected to counteract "identity-protective cognition," the species of motivated reasoning known to generate political polarization over risks and myriad policy and legally consequential facts.[13] Legal training and experience, on this view, endows judges and lawyers with a specialized form of cognitive

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10 *See generally* Jonathan P. Kastellec & Jeffrey R. Lax, *Case Selection and the Study of Judicial Politics*, 5 J. EMPIRICAL LEGAL STUD. 407 (2008) (arguing that case selection influences Supreme Court decisionmaking).

11 *See generally* Harry T. Edwards & Michael A. Livermore, *Pitfalls of Empirical Studies That Attempt to Understand the Factors Affecting Appellate Decisionmaking*, 58 DUKE L.J. 1895, 1945-46 (2008) (pointing out that in some cases the law requires moral judgments that, far from "tak[ing] the form of personal whim or preference . . . can include a situated and disciplined elaboration of the conventional norms of the American political community").

12 *See* Avani Mehta Sood, *Motivated Cognition in Legal Judgments-an Analytic Review*, 9 ANN. REV. L. & SOC. SCI. 307, 318 (2013) ("Although much can be gleaned from combining the experimental literature on motivated cognition with existing work on judicial biases more generally, there is a need for more targeted and systematic experiments that specifically investigate motivated cognition in populations of judges.").

13 *See* Dan Kahan, *Fixing the Communications Failure*, 463 NATURE 296 (2010) (likening "protective cognition" to "cultural cognition," in which an individual's group values influence her or her risk perceptions and related beliefs); David K. Sherman & Geoffrey L. Cohen, *The Psychology of Self-Defense: Self-Affirmation Theory*, 38 ADVANCES EXPERIMENTAL SOC. PSYCHOL. 183 (2006).

perception—what Karl Llewellyn called "situation sense"[14]—that reliably focuses their attention on the features of a case pertinent to its valid resolution. The results of our experiment support the conclusion that "situation sense" is sufficiently robust to fix judges' attention on such decision-relevant features of a case notwithstanding the tug of influences that might systematically focus the attention of the public on facts that are irrelevant—and indeed inimical—to impartial legal decisionmaking. Indeed, this dynamic creates a source of divergence between expert legal and non-expert lay assessments of law akin to the divergence between expert and lay assessments of risk.[15]

This form of professional judgment, however, does not furnish lawyers or judges with any special immunity to the reason-disturbing effects of identity-protective cognition outside of the domain of their own expertise. The domain-specificity of judges' (and lawyers') immunity to this form of motivated reasoning furnishes insight into a variety of more general questions, including why the capacity and disposition to engage in conscious, effortful information processing does not mitigate, but rather accentuates, the polarizing consequences of identity-protective cognition in members of the public on climate change, gun control, and other culturally charged issues.[16]

In addition to describing the design and reporting the results of our experimental study, we also offer a normative assessment of the findings. The conclusion that judges can in fact be expected to be neutral decisionmakers in many politically charged cases might be considered welcome news.

But the results also support a conclusion that ought to be a matter of deep concern for the legal profession: our system of justice lacks reliable practices for communicating courts' neutral resolution of divisive matters. As a result of identity-protective reasoning, diverse members of the public can be expected to form highly polarized perceptions of facts and highly polarized judgments about the dictates of the law in cases that resonate with contested

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14 *See* KARL N. LLEWELLYN, THE COMMON LAW TRADITION: DECIDING APPEALS 59-61, 121-57, 206-08 (1960) (outlining the similarities and differences of "situation sense" as it applies to judges and lawyers).

15 *See generally* HOWARD MARGOLIS, DEALING WITH RISK: WHY THE PUBLIC AND THE EXPERTS DISAGREE ON ENVIRONMENTAL ISSUES (1996) (theorizing that lay people miss cases that generally alter the analysis of risk, while experts take them into account).

16 *See, e.g.*, Dan M. Kahan, *Ideology, Motivated Reasoning, and Cognitive Reflection*, 8 JUDGMENT & DECISION MAKING 407 (2013) (describing research showing that cognitive reflection actually *enhances* ideologically motivated decisionmaking rather than mitigates it); Dan M. Kahan, Ellen Peters, Maggie Wittlin, Paul Slovic, Lisa L. Ouellette, Donald Braman & Gregory Mandel, *The Polarizing Impact of Science Literacy and Numeracy on Perceived Climate Change Risks*, 2 NATURE CLIMATE CHANGE 732 (2012) (citing studies disclaiming the notion that the public division on climate change rests on education).

cultural sensibilities. By virtue of their shared "situation sense," judges of comparably diverse outlooks might readily converge on outcomes that reflect legal norms understood not just by judges but by citizens generally to supply the appropriate guidance for resolving such disputes. But because members of the public lack exactly that perceptive capacity, they (or a substantial proportion of them) will predictably understand the outcome of such cases to be rooted in partisan biases nonetheless.[17] Deciding cases neutrally from the point of view of the law and communicating the neutrality of case outcomes to members of the public who are not legally trained, in other words, are completely different things. Judges might be experts at the former. But the persistent and widespread public sense that they are "politically motivated" suggests that the latter is not a component of their existing expertise.

Because popular assurance of the law's neutrality is itself one of the goods that law is expected to deliver in a liberal democratic society, the results of the experiment help to expose a serious deficit in the craft of judging. Remedying that deficit, we will argue, requires use of the same forms of valid empirical investigation used to identify it in this study.

Our presentation unfolds in five steps. Part I reviews the defects in existing studies of the influence of ideology on judicial decisionmaking. Part II presents a short theoretical discussion of competing conjectures on how the *professional judgment* of lawyers and judges might be thought to interact with the cognitive dynamics associated with ideologically biased information processing. Then in Part III we describe a study designed to test these conjectures in a manner unconfounded by the defects in existing investigations of judicial decisionmaking. We present the results of the study in Part IV. Part V discusses the significance of the results, both scholarly and practical.

I. EXISTING EMPIRICAL STUDIES AND THEIR LIMITATIONS

This study is intended to contribute to the empirical assessment of the political impartiality of judicial decisionmaking. It is therefore useful to begin by reviewing the state of existing scholarship on that topic.

Broadly speaking, empirical investigations of this issue can be divided into two classes: observational and experimental. Studies of these two varieties largely agree that "ideological" motivations, conscious or otherwise, make a contribution to judges' decisions that cannot otherwise be accounted for by their use of conventional legal reasoning.

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17 *See* Kahan, *Neutral Principles*, *Motivated Cognition*, *supra* note 9, at 4 (commenting that both political parties criticize the Supreme Court for being excessively partisan).

In this Part, we briefly survey these two classes of studies. We also identify the grounds on which critics have reasonably questioned the adequacy of these studies.

A. *Observational Studies*

Associated with the disciplines of political science and economics, studies that use observational methods make up the largest share of the literature on the impact of ideological motivations on judicial decisionmaking. Such studies use correlational analyses—in the form of multivariate regression models—that treat the "ideology" of individual judges as one "independent variable" the impact of which on case outcomes is assessed after "controlling for" additional influences represented by other "independent variables."[18]

There are different methods for measuring judges' "ideologies," including (in the case of federal judges) the party of the appointing President[19] and (in the case of Supreme Court Justices) the covariance of votes among judges who can be understood to be aligned along some unobserved or latent ideological continuum.[20] Such studies tend to find that "ideology" so measured explains a "statistically significant" increment of variance in judicial determinations. Studies looking at the decisions of federal courts of appeals, which assign cases to three-judge panels for determination, also find that the impact of ideology so measured can be either accentuated or muted depending on the ideological composition of judges on the particular panel.[21]

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18 *See generally* EPSTEIN, POSNER & LANDES, *supra* note 5 (using this method to classify judicial ideologies).

19 *See, e.g.*, CASS R. SUNSTEIN, DAVID SCHKADE, LISA M. ELLMAN & ANDRES SAWICKI, ARE JUDGES POLITICAL? AN EMPIRICAL ANALYSIS OF THE FEDERAL JUDICIARY (2006). Political scientists have enriched this measure in important and innovative ways that take account of, among other things, interactions between the appointing President and the confirming Senate. *See generally* Lee Epstein, Andrew D. Martin, Jeffrey A. Segal & Chad Westerland, *The Judicial Common Space*, 23 J.L. ECON. & ORG. 303 (2007) (critiquing past efforts to quantify political analyses of the judiciary and offering new methodology); Michael W. Giles, Virginia A Hettinger & Todd Peppers, *Picking Federal Judges: A Note on Policy and Partisan Selection Agendas*, 54 POL. RES. Q. 623 (2001) (using a methodology that analyzes federal courts of appeals and their appointments in relation to senatorial preferences).

20 *See generally* Andrew D. Martin & Kevin M. Quinn, *Dynamic Ideal Point Estimation Via Markov Chain Monte Carlo for the U.S. Supreme Court, 1953–1999*, 10 POL. ANALYSIS 134 (2002) (explaining a formula-based study intended to reveal political preferences of Supreme Court Justices over time). *But see* Joseph Bafumi, Andrew Gelman, David K. Park & Noah Kaplan, *Practical Issues in Implementing and Understanding Bayesian Ideal Point Estimation*, 13 POL. ANALYSIS 171, 186 (2005) (questioning the validity of the methodology used to array Justices and predict Supreme Court case outcomes).

21 *See, e.g.*, Richard L. Revesz, *Congressional Influence on Judicial Behavior? An Empirical Examination of Challenges to Agency Action in the D.C. Circuit*, 76 N.Y.U. L. REV. 1100, 1104 (2001)

Critics of these studies identify methodological problems that they believe constrain the strength of the inferences that can be drawn from them.[22] The most obvious of these is the sampling bias introduced by parties' conscious selection of cases for litigation.[23]

Parties are less likely to pursue litigation, either by filing the initial complaint or by appealing an adverse decision, when they recognize that a favorable outcome is highly unlikely. These cases either will not be filed or will be readily settled. Accordingly, the sample of cases featured in observational studies will be skewed toward ones where the outcomes are uncertain relative to the criteria that litigants have reason to know will influence judges. Any analysis confined to those cases, then, will necessarily *understate* the effective influence of the most effective outcome determinants, the impact of which consists primarily in steering a much larger class of cases away from litigation—and simply in regulating parties' behavior in a manner that makes litigation unnecessary.

Imagine, for example, that 99.99% of the effective universe of potential legal disputes, including many ideologically charged ones, were effectively removed from the sample of litigated cases by parties' accurate perception that judges, despite their diverse ideologies, would agree on the proper results. Any inference that judges are "ideologically biased" based on the remaining 0.01% (1/10,000th) of potential cases—the ones that by hypothesis are indeterminate when assessed by *non*-ideological criteria—would grossly overstate the impact of "ideology" on judicial reasoning.

We do not know, of course, what fraction of non-litigated disputes are removed from the observational sample by the parties' accurate perception that the outcomes would be a foregone conclusion. Indeed, we do not know what fraction of those "missing" observations are ones that reflect the parties' accurate perception that judges' *ideological* predispositions would have dictated the results. But without access to such evidence—and with no way to form estimates that do not assume the answers to the very questions that are the occasion for conducting such studies—no inferences can be drawn about the *true* effect of outcome-determinates from the class of observed cases.

(examining D.C. Circuit decisions involving health and safety regulations to determine if political party appointment affected case outcomes).

22 *See* Edwards & Livermore, *supra* note 11, at 1922 (noting several methodological issues with empirical studies of judicial decisions).

23 *See* George L. Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1, 4 (1984) (arguing that litigants are economically motivated and likely choose to pursue cases based on cost or likelihood of success).

Known as the "Priest–Klein" effect,[24] this form of selection bias is understood to pose serious—many say decisive—obstacles to the use of observational studies for assessing the impact of changes in law or procedure on case outcomes. The implications for drawing inferences about the "true" impact of the political outlooks of judges is just as devastating.[25] While sometimes acknowledged, the problems the Priest–Klein effect poses for observational investigation of the impact of judicial ideology have not been systematically addressed by those engaged in this form of analysis.[26]

Another more subtle but equally serious problem for observational studies of judicial ideology is the classification of the dependent variable—"case outcomes." In order to measure the impact of a judge's "ideology" on decisionmaking, it is necessary to determine which outcomes are consistent with that judge's ideology and which ones are not. Scholars doing observational studies generally classify outcomes as "liberal" or "conservative" based on the type of case and the prevailing party. For example, decisions favoring the government in "criminal" cases are deemed "conservative" and those favoring the defendant "liberal"; in labor law cases,

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24 *See generally* Richard L. Revesz, *A Defense of Empirical Legal Scholarship*, 69 U. CHI. L. REV. 169, 172-75 (2002). Note that the authors explore the converse situation to the one discussed *supra*. Namely, the authors suggest that parties may accurately perceive a common ideological bias among judges, and would be deterred from bringing cases that would likely be resolved unfavorably because of the judges' common ideological bias; the resulting observations would therefore *understate* the effects of ideology on judicial decisionmaking. *Id*. (discussing the hypothetical "rightward shift" of judges).

25 *See* Kastellec & Lax, *supra* note 10.

26 *See, e.g.*, SUNSTEIN, SCHKADE, ELLMAN & SAWICKI, *supra* note 19, at 126 (questioning the level of inferences that can be drawn when tracking judges' ideological preferences). Typically, such commentators are content to note that it is not the case that plaintiffs win 50% of the time, a theoretical implication of the formal model that Priest and Klein developed to present their argument. *See, e.g.*, Frank B. Cross, *Decisionmaking in the U.S. Circuit Courts of Appeals*, CALIF. L. REV. 1457, 1495-97 (2003) (finding that the 50% hypothesis is not supported by empirical evidence); Christopher Zorn & Jennifer Barnes Bowie, *Ideological Influences on Decision Making in the Federal Judicial Hierarchy: An Empirical Assessment*, 72 J. POL. 1212, 1218 (2010) (questioning the importance of the Priest–Klein effect and finding that factors such as judges' policy preferences are more influential). This is an unconvincing rejoinder. The Priest–Klein effect is not an empirical "hypothesis" that can be "disproven" by examining the success rates of particular classes of litigants. It is a logical point about how the biasing influences of unobserved variables in studies of litigated case outcomes affect the inferences that can be drawn from them. So long as there is reason to believe the dynamics the Priest–Klein effect identifies are at work, and unless one possesses some valid means for taking account of their impact, inferences drawn from litigated cases will be empirically unreliable. The observation that plaintiffs do not win 50% of the time does not supply any reason to doubt that parties' expectations about their prospects for success have an impact on the sample available for study in observational studies of judicial decisionmaking. It highlights only the deep uncertainty about exactly how much and in what ways litigation-selection effects bias estimates of outcome determinants in litigated cases.

outcomes are "conservative" if they favor "management," and "liberal" if they favor unions, and so forth.[27]

The crudeness of this scheme not only injects noise into empirical analyses of case outcomes but also biases it toward overstated estimates of the impact of "ideology" on judicial decisionmaking.[28] It is a well-known feature of the Anglo-American system of law that it frequently demands that judges resort to normative reasoning.[29] There is no way for highly general concepts such as "fraud," "unreasonable seizure," "unlawful restraint of trade," "fair use," "materiality," "freedom of speech," and the like to be made operative in particular cases without specifying what states of affairs those legal provisions should be trying to promote.[30] Under the "common law" style of reasoning dominant in Anglo-American law,[31] the sorts of moral judgments that judges exercise to supply content to these types of concepts is not unconstrained; shared understandings of the general aim of the enacting legislature or other law promulgator, the appropriate deference to be afforded to previous elaborations of the content of the legal concept in question, and conformity to broader normative precepts that structure the law ("notice and opportunity to be heard," "due process," "like cases treated alike," etc.) limit the available interpretive options. But in ruling out many solutions, the sources of valid normative inspiration that judges can draw on often do not rule only one in.[32]

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27 *See, e.g.*, FRANK B. CROSS, DECISION MAKING IN THE U.S. COURTS OF APPEALS 20 (2007) (discussing examples of ideological codifications for different types of case outcomes as well as the problems associated with these codifications); EPSTEIN, LANDES, & POSNER, *supra* note 5 at 107-16 (noting that the definitions of "liberal" and "conservative" have changed over time); SUNSTEIN, SCHKADE, ELLMAN & SAWICKI, *supra* note 19 (explaining the methodology behind a study of three-judge panel decisions that used "liberal" or "conservative" to classify case outcomes).

28 *See e.g.*, Edwards & Livermore, *supra* note 11, at 1945-48 (arguing that judges' ideologies are not necessarily extrinsic to the law, and that studies using measures of "liberal" and "conservative" fail to account for this); Carolyn Shapiro, *Coding Complexity: Bringing Law to the Empirical Analysis of the Supreme Court*, 60 HASTINGS L.J. 477, 485-88 (2009) (criticizing previous studies that simplify judicial opinions into a liberal–conservative dichotomy).

29 *See generally* RONALD DWORKIN, LAW'S EMPIRE (1986) (providing an overview of different legal theories and their varying emphasis on judges' normative reasoning); EDWARD H. LEVI, AN INTRODUCTION TO LEGAL REASONING (2013) (providing a realist explanation to legal reasoning).

30 *See* Neal Devins, *How State Supreme Courts Take Consequences into Account: Toward a State-Centered Understanding of State Constitutionalism*, 62 STAN. L. REV. 1629, 1655-56 (2009) (describing state court exercise of consequentialist judgment contemplated by conventional understandings of constitutional jurisprudence).

31 *See* Henry J. Friendly, *In Praise of* Erie*—and of the New Federal Common Law*, 39 N.Y.U. L. REV. 383, 405 (1964) (discussing persistence of "specialized federal common law"); Thomas W. Merrill, *The Common Law Powers of Federal Courts*, 52 U. CHI. L. REV. 1, 5 (1985) (describing ubiquity of statutes that implicitly delegate federal common lawmaking power).

32 *See generally* DWORKIN, *supra* note 29; Jeffrey A. Pojanowski, *Reading Statutes in the Common Law Tradition*, 101 VA. L. REV. 1357 (2015).

In this environment, it is perfectly commonplace for judges who have competing "jurisprudential" orientations to *disagree* on what normative theory should animate a particular legal provision. It is not a surprise, either, that in those instances the competing orientations that guide judges will be correlated with *alternative political philosophies* or orientations on the part of the judges in question.[33] Justice Douglas had a populist "economic decentralization" conception of "restraint of trade" for purposes of the Sherman Act; Professor and then Judge Robert Bork subscribed to an economic, "consumer welfare" alternative.[34] These positions undoubtedly cohered with their respective political "ideologies," too, and likely did as well with the "ideologies" of judges who championed one versus the other understanding of how U.S. antitrust law should be structured. But those who understand how the law works—and the contribution that judges, using normative theories, make, in imparting content to it—would not characterize this debate as reflecting extralegal "ideological" considerations as opposed to the perfectly ordinary, acceptable exercise of jurisprudential judgments.[35] Multivariate regression models are not necessary to ferret out the contribution that value-laden theories make to how judges decide these cases; judges openly *admit* that they are using such theories. Regardless of which President appointed these judges to the federal bench, no *lawyer* understands judges engaged in this sort of reasoning to be invoking "personal political preferences."

An entirely different matter would have been presented, however, had Justice Douglas or Judge Bork proposed deciding an antitrust, labor law, free speech, criminal law or any other sort of case based on the religious affiliation of the litigants or on the contribution a particular outcome would have made to the electoral prospects of a candidate for President. The Sherman Act, the Wagner Act, the First Amendment, and even myriad criminal law statutes[36]

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33 *See* Edwards & Livermore, *supra* note 11, at 1947.

34 *Compare* C. Paul Rogers III, *The Antitrust Legacy of Justice William O. Douglas*, 56 CLEV. ST. L. REV. 895, 924-25 (2008), *with* ROBERT H. BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF (1978).

35 *See, e.g.*, Frank Easterbrook, *Statutes' Domains*, 50 U. CHI. L. REV. 533, 544 (1983) ("The statute books are full of laws, of which the Sherman Act is a good example, that effectively authorize courts to create new lines of common law."); Richard A. Posner, *Statutory Interpretation—in the Classroom and in the Courtroom*, 50 U. CHI. L. REV. 800, 818 (1983) ("[T]he judge will be alert to any sign of legislative intent regarding the freedom with which he should exercise his interpretive function. . . . If the legislature enacts into statute law a common law concept, as Congress did when it forbade agreements in 'restraint of trade' in the Sherman Act, that is a clue that the courts are to interpret the statute with the freedom with which they would construe and apply a common law principle . . . .").

36 *See* United States v. Pino-Perez, 870 F.2d 1230, 1239 (7th Cir. 1989) (en banc) (Easterbrook, J., dissenting) (noting that "[the federal aiding and abetting statute] has never been applied

all demand the use of the form of guided normative theorizing we are describing. But the bare desire to use legal outcomes in particular cases (or in large classes of them) to disadvantage those who subscribe to a disfavored view of the best life or to advance the cause of a particular political party is plainly outside the range of considerations that can *validly* be appealed to in the exercise of normative reasoning intrinsic to law. Whether in the form of regression coefficient correlations, law-enforcement wiretaps, or anonymously leaked emails, evidence that judges of particular ideologies were being influenced by such considerations would be a ground for intense concern.

There is a distinction, in sum, between resort to normative considerations that are internal to law and ones external to it. The former are licit, the latter illicit, from the perspective that lawyers and judges in the U.S. system of justice share of what counts as *valid* legal reasoning.[37]

The "prevailing party" outcome-classification scheme used in observational studies of judicial ideology is blind to the distinction. As a result, such studies will count in their estimates of the influence of "ideology" perfectly mundane associations between the jurisprudential philosophies of judges deciding cases on the basis of normative considerations internal to law and the party of the Presidents who appointed them or the voting records of those judges and judges who feel likewise about the normative theories that inform labor law, free speech cases, criminal cases and the like.[38]

The correlations that these researchers report *could* also be capturing judges' reliance on illicit political considerations, external to the law. But, as critics point out, there is no way to know whether this is the case, or to what extent, given the indiscriminate coding of outcome variables that these studies employ.[39]

Some candid adherents to the "ideology thesis"[40] have acknowledged this point.[41] But they have not supplied a response to what critics would identify

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mechanically," but rather that "its scope depends on the structure and functions of the substantive statute[,]" the interpretations of which may be guided by normative concerns).

37 *See* Edwards & Livermore, *supra* note 11, at 1947-48.

38 *See id.* at 1927 (noting that outcome-based coding of judicial decisions ignores important purposes and factors of judicial decisionmaking).

39 *See* Carolyn Shapiro, *The Context of Ideology: Law, Politics, and Empirical Legal Scholarship*, 75 MO. L. REV. 1 (2010) (criticizing current ideological coding of judicial decisions).

40 *See* Edwards & Livermore, *supra* note 11, at 1959-62 (discussing points of support and criticism towards the ideology thesis).

41 *See* Thomas J. Miles & Cass R. Sunstein, *The New Legal Realism*, 75 U. CHI. L. REV. 831, 844 (2008) (identifying as a "jurisprudential" issue worthy of "further exploration" the possibility that variance between Democratic and Republican judicial appointees might be explained consistent

as the significance of this concession. When observational-study proponents declare that they are finding that "ideology" accounts for judges' decisions, they *say* they are measuring the extent to which those judges are *not* deciding cases on the basis of "law." That is what gives this entire body of literature its currency—its "shock value." But to the extent that the observational-study scholars are finding that judges who have different judicial philosophies will sometimes validly interpret the law to support different conclusions, then they are telling us something that already is clear and that gives no one any reason to be concerned about the quality of judicial decisionmaking.

B. *Experimental Studies*

Studies that use experimental methods have been used to examine the impact of *motivated reasoning* on legal decisionmaking. Motivated reasoning refers to the tendency of people to conform their assessments of information—from logical arguments to empirical data, from expert judgments to their own sense impressions—to some end or goal extrinsic to judgment *accuracy*.[42]

One such interest can be to protect the status of, or one's own standing in, an important affinity group, a form of motivated reasoning known as identity-protective cognition.[43] The impact of identity-protective cognition in distorting assessments of evidence has been identified as an important source of political polarization over issues like climate change, gun control, the HPV vaccine, nuclear power, and the like.[44]

Studies have demonstrated that identity-protective cognition can affect assessment of evidence relevant to legal decisions, too.[45] In mock juror studies, subjects have been shown to form different assessments of the facts in cases involving alleged intimidation of pedestrians by political protestors, excessive force by police, and violent confrontations between private citizens, depending on the relationship of the group identities and values of the parties, on the one hand, and the study subjects' own group commitments, on the other.[46] Studies have also shown that identity-protective cognition can

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with "Ronald Dworkin's account of law as a search for 'integrity,' through which judges seek both to 'fit' and to "justif[y] preexisting legal decisions").

42 Ziva Kunda, *The Case for Motivated Reasoning*, 108 PSYCHOL. BULL. 480, 480-81 (1990).

43 *See* Sherman & Cohen, *supra* note 13, at 191-92.

44 *See, e.g.*, Kahan, *supra* note 13, at 296.

45 *See* Sood, *supra* note 12.

46 *See* Yael Granot, Emily Balcetis, Kristin E. Schneider & Tom R. Tyler, *Justice Is Not Blind: Visual Attention Exaggerates Effects of Group Identification on Legal Punishment*, 143 J. EXPERIMENTAL PSYCHOL. 2196 (2014); Dan M. Kahan, David A. Hoffman, Donald Braman, Danieli Evans & Jeffrey J. Rachlinski, *They Saw a Protest: Cognitive Illiberalism and the Speech–Conduct Distinction*, 64

influence the interpretation of formal legal rules—such as those relating to consent in acquaintance rape cases;[47] or the use of deadly violence by battered women against their abusive mates and by "beleaguered commuters" against young African-American men.[48]

These experiments avoid the methodological difficulties that mar observational studies. In an experiment, the researcher can directly measure the form of group commitments that she hypothesizes have the potential to unconsciously bias the decisionmaker. Moreover, she can "select" the case, designing it in a manner that enables unbiased observation of the responsiveness of the study subject to experimentally manipulated sources of identity-protective motivation that are *analytically independent* of the legal rules or forms of legal reasoning appropriate for deciding it. If the experimental manipulation generates the hypothesized differences in the outcomes of decisionmakers with opposing identities, the inference that their reasoning was biased by ideological commitments extrinsic to the law is ironclad.

Nonetheless, existing identity-protective cognition experiments suffer from their own limitation: they have not been performed on judges. Mock jury studies have involved legally untrained members of the public.[49] Studies involving legal reasoning, too, have involved either members of the public, or else college or law school students.[50]

This is a serious limitation.[51] Experimental studies of identity-protective cognition have deepened scientific understanding of human decisionmaking. But neither the vulnerability of individuals to this bias nor the threat that it poses to liberal ideals of neutrality comes as a great revelation to the law.[52] Doctrines of constitutional law anticipate identity-protective cognition in legislators: the Free Speech, Due Process, Equal Protection, and Free Exercise Clauses not only prohibit lawmakers from expressly imposing a

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STAN. L. REV. 851 (2012); Dan M. Kahan, David A. Hoffman & Donald Braman, *Whose Eyes Are You Going to Believe?* Scott V. Harris *and the Perils of Cognitive Illiberalism*, 122 HARV. L. REV. 837 (2009).

47 *See* Dan M. Kahan, *Culture, Cognition, and Consent: Who Perceives What, and Why, in Acquaintance-Rape Cases*, 158 U. PA. L. REV. 729, 804-06 (2010).

48 *See* Dan M. Kahan & Donald Braman, *The Self-Defensive Cognition of Self-Defense*, 45 AM. CRIM. L. REV. 1, 34-35 (2008).

49 *See e.g.*, *id.*; Kahan, Hoffman & Braman, *supra* note 46; Janice Nadler & Mary-Hunter McDonnell, *Moral Character, Motive, and the Psychology of Blame*, 97 CORNELL L. REV. 255, 274 (2012); Avani Mehta Sood & John M. Darley, *The Plasticity of Harm in the Service of Criminalization Goals*, 100 CALIF. L. REV. 1313, 1324-25 (2012).

50 *See* BRAMAN, *supra* note 6, at 87; Braman & Nelson, *supra* note 6, at 945; Ward Farnsworth, Dustin F. Guzior & Anup Malani, *Implicit Bias in Legal Interpretation* (John M. Olin Program in Law & Economics, Working Paper No. 577, 2011).

51 *See* Sood, *supra* note 12, at 318.

52 *See* Kahan, *Neutral Principles, Motivated Cognition*, *supra* note 9, at 4.

cultural orthodoxy,[53] but also mandate strict scrutiny to flush out hidden motivations for disadvantaging those who deviate from dominant norms.[54] Procedural rules recognize the same vulnerability in jurors, forbidding the introduction of evidence that might excite aversion to a party's identity or values.[55] Instilling the reasoning skills and habits of mind essential to administering these rules in a reliable and even-handed manner is one of—if not the—central objective of legal training.

Because the entire point of this regime is to insulate the law from the impact of identity-protective cognition on ordinary members of the public, it is question-begging to cite the public's vulnerability to that bias as reason to believe that it distorts the reasoning of judges as well.[56] It is certainly not unreasonable—indeed, it is quite plausible—to *hypothesize* that identity-protective cognition could be disabling judges from shielding liberal democratic government from the threat posed to it by its diverse citizenry's own vulnerability to identity-protective cognition. But to the extent that such conjecture is based on casual observation of how courts resolve controversial cases, the experimental study of identity-protective cognition actually furnishes strong evidence to be *skeptical* of such a surmise: those studies show us that ordinary members of the public, precisely because they selectively credit and discredit all manner of information in patterns congenial to their own cultural predispositions, can be expected to perceive court decisions they disagree with as biased *even if* those decisions reflect the impartial application of neutral principles of law.[57]

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53 *See* W. Va. State Bd. of Educ. v. Barnette, 319 U.S. 624, 642 (1943) ("If there is any fixed star in our constitutional constellation, it is that no official, high or petty, can prescribe what shall be orthodox in politics, nationalism, religion, or other matters of opinion . . . .").

54 *See* JOHN HART ELY, DEMOCRACY AND DISTRUST: A THEORY OF JUDICIAL REVIEW 146 (1980) ("[S]pecial scrutiny . . . turns out to be a way of 'flushing out' unconstitutional motivation . . . ."); Elena Kagan, *Private Speech, Public Purpose: The Role of Governmental Motive in First Amendment Doctrine*, 63 U. CHI. L. REV. 413, 431 n.55, 453-55, 500-01 (1996) (arguing that the strict scrutiny standard is a means of measuring government motive in passing laws that disadvantage certain groups); Jed Rubenfeld, *Affirmative Action*, 107 YALE L.J. 427, 436-37 (1997) ("[Strict scrutiny's] function . . . is to smoke out illegitimate purposes that cannot be a valid basis for state action under the Equal Protection Clause.").

55 *See, e.g.*, FED. R. EVID. 404 (barring "character propensity" proof); FED. R. EVID. 610 (barring "evidence of a witness's religious beliefs or opinions . . . to attack or support the witness's credibility").

56 *Cf.* BRAMAN, *supra* note 6, at 87-89; Braman & Nelson, *supra* note 6, at 940-45 (implying that the results of an experiment with students support inferences on how judges reason in legal decisions).

57 *See* Kahan, *Cognition of Law*, *supra* note 9, at 60. Some judges report believing that identity-protective cognition or related forms of motivated reasoning also affect judicial reasoning. *See, e.g.*, RICHARD A. POSNER, HOW JUDGES THINK 116 (2008) (asserting that judges rely on "cultural cognition" in assessing empirical claims). We do not think that this is relevant evidence. The impact

The only valid means to test whether judges are prone to ideological bias as a result of identity-protective cognition is to perform valid identity-protective cognition studies on actual judges.[58] No such studies have yet been performed.[59]

But two are at least suggestive. In an important recent article, Andrew Wistrich, Jeffrey Rachlinski, and Chris Guthrie report a series of experiments that compared the determinations of judges randomly assigned to conditions that featured either "sympathetic" or "unsympathetic" litigants.[60] In one involving the application of a medical marijuana statute, a larger proportion of judges accepted the adequacy of a medical-need affidavit proffered by a middle-aged man who was "married with three children," "employed as an accountant," and who "lacked a "criminal record" than that of a 19-year old "currently unemployed" man who was "on probation for beating his ex-girlfriend, and had a juvenile record for drug possession and drug dealing." Similarly, a group of bankruptcy judges were less likely to discharge the debt of a college student who used a credit card "for spring break, where she charged her hotel room, meals, and rounds of drinks for friends," than they were to discharge that of a student who used the card to visit and buy medicines for her mother, "who was battling cancer, lacked health insurance, and needed assistance recovering from a recent surgery."[61] The authors treat these and similar results as evidence that the judges' had been "motivated" to reach outcomes that matched their "emotional" evaluations of the parties.[62]

Significantly, however, judges of *different political ideologies* did not react differently to the experimental stimuli.[63] Indeed, Wistrich et al. express surprise at "the lack of a political influence given the widespread findings [in observational studies] that politics influences appellate judges."[64] Because Wistrich et. al report that their experiments furnished "little support for the proposition that political ideology drives much judicial decision making,"[65] it

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of unconscious biases on oneself cannot be reliably detected by introspection, much less discerned in others via casual observation. *See generally* Emily Pronin, Daniel Y. Lin & Lee Ross, *The Bias Blind Spot: Perceptions of Bias in Self Versus Others*, 28 PERSONALITY & SOC. PSYCHOL. BULL. 369 (2002).

58 Kahan, *Cognition of Law*, *supra* note 9, at 60; Kahan, *Neutral Principles, Motivated Cognition, supra* note 9, at 27-28.

59 *See* Sood, *supra* note 12, at 318 ("[T]here is a need for more targeted and systematic experiments that specifically investigate motivated cognition in populations of judges.").

60 *See* Andrew J. Wistrich, Jeffrey J. Rachlinski & Chris Guthrie, *Heart Versus Head: Do Judges Follow the Law of Follow Their Feelings?*, 93 Tex. L. Rev. 855 (2015).

61 *Id*. at 888.

62 *See id*. at 899-900.

63 *See id.* at 880, 889-90.

64 *Id*. at 880.

65 *Id*. at 899.

is tempting to treat their results as evidence that *politically* motivated reasoning *does not* affect judges.

We would understand, however, why a reasonable person might not be persuaded by this interpretation. By their own account, Wistrich et al. designed their experiments to test whether "emotions" would motivate judges in *general* to "bend[] the law to achieve justice."[66] It is unclear whether indulging this *shared* sense of justice actually required much law bending on the part of the judges in the studies.[67] But what is clear is that the Wistrich et al. experiments simply were not designed in a manner that could have been expected to generate *divergent* responses among judges with conflicting conceptions of justice based on *opposing* ideologies.

The second study—another well done and important one—was designed to do exactly that.[68] In it, Richard Redding and N. Dickon Reppucci tested how a sample of judges and law students reacted to social science studies relating to the deterrent efficacy of the death penalty.[69] In both students and judges, pre-existing opinions and political outlooks were correlated with the subjects' decision to afford "dispositive weight" to the studies in determining the constitutionality of the death penalty. The same factors, however, influenced only the students' and *not* the judges' assessments of the admissibility of such evidence in legal proceedings.[70]

Certain features of the design of the Redding–Reppucci study admittedly limit the strength of the inferences that can be drawn from it. First, the study was not suited to assessing motivated reasoning. In examining whether their subjects were willing to treat the deterrence studies as "dispositive" for their legal rulings, Redding and Reppucci effectively measured whether their subjects' changed their views after being exposed to contrary evidence. The

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66 *Id.* at 899.

67 Some of Wistrich et al.'s results can fairly be read this way but many cannot. In the medical-marijuana problem, for example, the statute expressly stated that the medical-need affidavit must indicate that the "the medical use of marijuana" was necessary "to treat or alleviate the person's *serious or debilitating* medical condition or symptoms." *Id.* at 914 (emphasis added). The "sympathetic" party's affidavit in fact described him as suffering from "severe pain caused by bone cancer," a "debilitating" condition that "would likely kill him in a year"; the "unsympathetic" defendant's affidavit, in contrast, stated that he was "being treated for occasional *mild* seizures" that were "*not* debilitating and might abate within a year." *Id.* (emphasis added). In this problem, then, the emotional sensibilities that Wistrich et al. attribute to the judges in the two conditions matched up with the language of the statute being construed. In the bankruptcy case, too, differing reactions to the "sympathetic" and "unsympathetic" parties' *reasons* for incurring debt were relevant to the *credibility* of their respective denials of fraudulent intent, the honesty of which was the only issue for decision.

68 *See* Richard E. Redding & N. Dickon Reppucci, *Effects of Lawyers' Socio-Political Attitudes on Their Judgments of Social Science in Legal Decision Making*, 23 L. & HUM. BEHAV. 31 (1999).

69 *See id.* at 34-35.

70 *Id.* at 48.

subjects' failure to do so *could* have reflected motivated reasoning but is in fact consistent with unbiased information processing as well. For example, subjects of opposing views could have viewed the deterrence studies as equivalent in significance to ones they had examined before the study. Additionally, those with opposing views might have viewed the contrary evidence as comparably strong but not sufficiently so to outweigh the force of additional evidence they had evaluated before the study. Ruling out these competing inferences requires a design that can detect whether subjects are in fact opportunistically adjusting the assessments they make of one and the same piece of evidence based on its perceived relationship to their pre-existing opinion or their group identities.[71]

Second, the deterrent efficacy of the death penalty does not uniquely determine the answer to the legal problem the subjects addressed: Is the death penalty unconstitutional? That question turns on additional normative considerations that are likely to be correlated with political outlooks but that are nevertheless intrinsic to law. A legal decisionmaker could legitimately rely on such considerations, then, without being engaged in "ideologically biased" reasoning.[72]

Nevertheless, the Redding–Reppucci finding that judges of opposing outlooks did not vary in their rulings on the *evidentiary admissibility* of the studies furnishes some reason—contrary to the prevailing scholarly view—to think that judges will *not* be influenced by political commitments *extrinsic* to the legal issue at hand. That Redding and Reppucci found that the evidentiary rulings of the law students, in contrast, *were* so affected underscores the mistake of assuming that one can generalize from the vulnerability of non-judges to politically biased reasoning to the vulnerability of judges to this same impediment to neutral decisionmaking.

But the bottom line can be stated simply: "[T]here is a need for more targeted and systematic experiments that specifically investigate motivated cognition in populations of judges" before any firm conclusions can be drawn.[73]

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71 *See* James N. Druckman, *The Politics of Motivation*, 24 CRITICAL REV. 199, 203-07 (2012); Alan Gerber & Donald Green, *Misperceptions About Perceptual Bias*, 2 ANN. REV. POL. SCI. 189, 206 (1999); Kahan, *Cognition of Law*, *supra* note 9, at 60.

72 *See supra* notes 30–35 and accompanying text; *cf.* Redding & Reppucci, *supra* note 68, at 48. This same difficulty—the use of designs that tested the influence of values intrinsic rather than genuinely extrinsic to the legal problem being addressed—constrains the strength of the inferences that can be drawn from various other studies involving law students and members of the public. *See, e.g.*, Braman & Nelson, *supra* note 6, at 947 (manipulating the authorities in a constitutional law case pertinent to reconciling tension between anti-discrimination and free speech principles); Nadler & McDonnell, *supra* note 49, at 73 (manipulating the moral quality of behavior legally relevant to assessing issue of "causation").

73 Sood, *supra* note 12, at 318.

II. INFORMATION PROCESSING, PATTERN RECOGNITION AND PROFESSIONAL JUDGMENT

While no study has tested the vulnerability of judges to identity-protective cognition, judges have been the focus of an impressive collection of studies examining other cognitive dynamics. Rooted in behavioral law and economics,[74] these studies feature mechanisms such as "hindsight bias," "anchoring," "probability neglect," and the like,[75] the effects of which bias probabilistic reasoning.

These studies suggest that judges enjoy limited but imperfect resistance to these biases. They thus reinforce the conclusion that the vulnerability of judges to identity-protective cognition cannot reliably be determined without the benefit of actual experimental inquiry.

The important forms of experimental inquiry that have actually been performed on judges, moreover, do not furnish insight into this particular issue. Behavioral economics examines biases associated with over-reliance on heuristic information processing, which consists of rapid, unconscious, affective reactions. Labeled "System 1," this form of reasoning is an alternative to "System 2" information processing, which is conscious, effortful, and analytic, and which is understood to counteract the biases that the behavioral economics inventory comprises.[76]

Experimental study of identity-protective cognition, however, shows that it is *not* a consequence of over-reliance on heuristic information processing. On the contrary, multiple studies have found that the individuals most proficient in and most disposed to resort to System 2 modes of information processing are even more likely to construe information in a manner that evinces identity-protective reasoning.[77] As a result, individuals who are revealed by one measure or another to be those least vulnerable to the biases associated with over-reliance on heuristic, System 1 information processing

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74 *See generally* Christine Jolls, Cass R. Sunstein & Richard Thaler, *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471 (1998) (proposing an economic analysis of legal rules and legal actors based in considerations of actual behavior that include fallacious and directional decisionmaking).

75 *See* Chris Guthrie, Jeffrey J. Rachlinski & Andrew J. Wistrich, *Blinking on the Bench: How Judges Decide Cases*, 93 CORNELL L. REV. 1, 19-27 (2007) (reviewing studies of judicial decisionmaking which analyze the influence of anchoring, statistical inferences, and hindsight bias).

76 *See generally* Daniel Kahneman, *Maps of Bounded Rationality: Psychology for Behavioral Economics*, 93 AM. ECON. REV. 1449 (2003); Daniel Kahneman & Shane Frederick, *A Model of Heuristic Judgment*, *in* THE CAMBRIDGE HANDBOOK OF THINKING AND REASONING 267, 267-68 (2005).

77 *See* Kahan, *supra* note 16, at 416; Kahan, Peters, Wittlin, Slovic, Ouellette, Braman & Mandel, *supra* note 16.

are in fact the most politically polarized on contested issues like climate change, gun control, nuclear power, fracking, and the like.[78]

Legal training and practice can reasonably be understood to cultivate proficiency in conscious, analytical forms of reasoning. Thus, the work on "motivated System 2 reasoning"—that portion of the literature that examines the tendency of conscious, effortful information processing to magnify identity-protective cognition[79]—might in fact be regarded as furnishing strong support for the conjecture that unconscious cultural partisanship can be expected to subvert judicial neutrality.[80]

Nevertheless, when judges decide cases, they are not merely engaging in conscious, effortful information processing. They are exercising *professional judgment*. Professional judgment consists of habits of mind—conscious and effortful to some degree, but just as much tacit and perceptive—that are distinctively fitted to reasoning tasks that fall outside ordinary experience.[81] Indeed, it is characterized in many fields by resistance to all manner of error, including ones founded on heuristic information processing that would defeat the special form of decision that professional judgment facilitates.[82]

The dominant scholarly account of professional judgment roots it in the dynamic of *pattern recognition*.[83] Pattern recognition consists of the rapid un- or pre-conscious matching of phenomena with mentally inventoried prototypes. A ubiquitous form of information processing, pattern recognition is the type of cognition that enables human beings to recognize faces and read one another's' emotions.[84] But it is also the basis for many forms of highly

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78 *See* Dan M. Kahan, *What is the "science of science communication"?*, J. SCI. COMM. (Aug. 25, 2015), http://jcom.sissa.it/archive/14/03/JCOM_1403_2015_Y04 [http://perma.cc/NL8M -U8MM].

79 *See* Dan M. Kahan, Ellen Peters, Erika Cantrell Dawson & Paul Slovic, *Motivated Numeracy and Enlightened Self-Government* 25 (Cultural Cognition Project, Working Paper No. 116, 2013), http://static1.1.sqspcdn.com/static/f/386437/23982003/1385735927633/wp_draft_1.5_9_14_13.pdf?token=k30G7Vfla1yerw5DPKyLzu6KN2A%3D [http://perma.cc/Q9UD-CVWG]; *supra* note 16.

80 In fact, evidence suggests that judges score higher than average on the Cognitive Reflection Test (CRT), *see* Shane Frederick, *Cognitive Reflection and Decision Making*, J. ECON. PERSP., Fall 2005, at 25, which is the standard measure of the capacity and disposition to use System 2 reasoning. Guthrie, Rachlinski & Wistrich report that a large sample of state court judges (N = 250) attained a mean CRT score of 1.23. Guthrie, Rachlinski & Wistrich, *supra* note 75, at 14. The mean score in a general population sample is approximately 0.65. The score of the judges in the conference would place them between the 75th and 90th percentile for the general population. Kahan, *supra* note 77, at 410.

81 *See* MARGOLIS, *supra* note 15, at 35.

82 *See id.*

83 *See generally* HOWARD MARGOLIS, PATTERNS, THINKING, AND COGNITION: A THEORY OF JUDGMENT (1987).

84 *See* PAUL M. CHURCHLAND, THE ENGINE OF REASON, THE SEAT OF THE SOUL: A PHILOSOPHICAL JOURNEY INTO THE BRAIN 27-42, 123-32 (1995).

specialized forms of expert decisionmaking.[85] Highly proficient chess players, for example, outperform others not by anticipating and consciously simulating a longer sequence of potential moves, but by more reliably *perceiving* the prototypical affinity of different board positions to ones that thousands of hours of experience have taught them confer an advantage.[86] Likewise, the proficiency of aerial photography analysts consists in their tacit ability to discern prototypical clusters of subtle cues that allow them to cull from large masses of scanned images ones that profitably merit more fine-grained analysis.[87] Forensic accountants must use the same form of facility as they comb through mountains of records in search of financial irregularities or fraud.[88]

Expert medical judgment supplies an especially compelling and instructive example of the role of pattern recognition. Without question, competent medical diagnosis depends on the capacity to draw valid inferences from myriad sources of evidence that reflect the correlation between particular symptoms and various pathologies—a form critical reasoning that figures in System 2 information processing. But studies have shown that an appropriately attuned capacity for pattern recognition plays an indispensable role in expert medical diagnosis, for unless a physician is able to form an initial set of plausible conjectures—based on the match between a patient's symptoms and an appropriately stocked inventory of disease prototypes—the probability that the physician will even know to collect the evidence that enables a proper diagnosis will be unacceptably low.[89]

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85 *See* Erik Dane & Michael G. Pratt, *Exploring Intuition and Its Role in Managerial Decision Making*, 32 ACAD. MGMT. REV. 33, 42-43 (2007).

86 *See* Herbert A. Simon & William G. Chase, *Skill in Chess: Experiments with Chess-Playing Tasks and Computer Simulation of Skilled Performance Throw Light on Some Human Perceptual and Memory Processes*, 61 AM. SCIENTIST 394, 402 (1973).

87 *See* ELEANOR J. GIBSON, PRINCIPLES OF PERCEPTUAL LEARNING AND DEVELOPMENT 8 (1969).

88 *See, e.g.*, Jean C. Bedard & Stanley F. Biggs, *Pattern Recognition, Hypotheses Generation, and Auditor Performance in an Analytical Task*, 66 ACCT. REV. 622, 624 (1991).

89 *See generally* James A. Marcum, *An Integrated Model of Clinical Reasoning: Dual-Process Theory of Cognition and Metacognition*, 18 J. EVALUATION CLINICAL PRAC. 954 (2012) (proposing a model of reasoning by treating physicians which relies on initial pattern recognition); Geoff Norman, Meredith Young & Lee Brooks, *Non-Analytical Models of Clinical Reasoning: The Role of Experience*, 41 MED. EDUC. 1140 (2007) (demonstrating experimentally that expert medical diagnosis relies on initial recognition of significant patterns); Vimla L. Patel, David R. Kaufman & Jose F. Arocha, *Emerging Paradigms of Cognition in Medical Decisionmaking*, J. BIOMEDICAL INFORMATICS, Feb. 2002, at 52 (suggesting additional research into intuitive, non-analytical components of medical diagnostic decisionmaking); Vimla L. Patel & Guy J. Groen, *Knowledge Based Solution Strategies in Medical Reasoning*, 10 COGNITIVE SCI. 91 (1986) (reporting that accurate diagnoses in an empirical study were reached by physicians who relied on an initial experiential knowledge base before immediately resorting to hypothesis testing).

The proposition that pattern recognition plays this role in professional judgment is most famously associated with Howard Margolis.[90] Focusing on expert assessment of risk,[91] Margolis described a form of information processing that differs markedly from the standard System 1/System 2 conception of dual-process reasoning. The latter attributes proficient risk assessment to an individual's capacity and disposition to "override" his or her unconscious System 1 affective reactions with ones that reflect effortful System 2 assessments of evidence.[92]

Margolis, in contrast, suggests an integrated and reciprocal relationship between unconscious, perceptive forms of cognition, on the one hand, and conscious, analytical ones, on the other. Much as in the case of proficient medical diagnosis, expert risk assessment demands reliable, preconscious apprehension of the phenomena that *merit* valid analytical processing. Even then, the effective *use* of data generated by such means, Margolis maintains, will depend on the risk expert's reliable assimilation of such evidence to an inventory of patterns that consists in prototypical representations of cases that give proper effect to data of that sort. Of course, the quality of an expert's pattern recognition capacity will depend heavily on his or her proficiency in conscious, analytical reasoning. That form of information processing, employed to assess and re-assess successes and failures over the course of the expert's training and experience, is what *calibrates* the expert's perceptive faculty.

To translate Margolis's account back into the dominant conception of dual-process reasoning, System 2 gets nowhere—because it is not reliably activated—without a discerning System 1 faculty of perception. The reliability of System 1, however, in turn presupposes the contribution System 2 makes to the process of continual self-evaluation necessary to calibrate perceptive judgment.[93]

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90 MARGOLIS, *supra* note 15; MARGOLIS, *supra* note 83.

91 *See* MARGOLIS, *supra* note 15.

92 *See* Kahneman, *supra* note 76, at 1450-54; Kahneman & Frederick, *supra* note 76, at 273.

93 *See* MARGOLIS, *supra* note 15, at 49-70; *see also* MARGOLIS, *supra* note 83, at 63-86. Margolis's account is not so much an alternative *to* as an alternative conception *of* dual process reasoning. Again, whereas Kahneman tends to conceptualize "System 1" and "System 2" in discrete, hierarchical terms, Kahneman, *supra* note 76, at 1451, Margolis's conception sees pre- or unconscious forms of information processing and conscious, effortful forms as integrated and reciprocal. There are other dual-process theorists who offer integrated, reciprocal accounts as well. *See, e.g.*, KEITH E. STANOVICH, RATIONALITY AND THE REFLECTIVE MIND 139-54 (2011); Valerie F. Reyna, *How People Make Decisions That Involve Risk: a Dual-Processes Approach*, 13 CURRENT DIRECTIONS IN PSYCHOL. SCI. 60 (2004). The work of Peters and her collaborators on numeracy, in particular, suggests a reciprocal, integrated conception of dual-process reasoning insofar as higher numeracy is associated with—because presumably it is activated by—more precise affective discernment of advantageous decisionmaking opportunities. *See* Ellen Peters, Daniel Västfjäll, Paul Slovic, C. K.

Karl Llewellyn suggested an account of the reasoning style of lawyers and judges very much akin to Margolis's view of professional judgment. Although Llewellyn is often identified as emphasizing the indeterminacy of formal legal rules and doctrines, the aim of his most important works was to explain how there could be such a tremendously high degree of *consensus* among lawyers and judges on what those rules and doctrines entail.[94] His answer was "situation sense": a perceptive faculty, formed through professional training and experience, that enables lawyers and judges to reliably assimilate controversies to "situation-types" that indicate their proper resolutions.[95] Llewellyn discounted the emphasis on deductive logic featured in legal argumentation. But he did *not* dismiss such reasoning as mere confabulation: in his view, lawyers and judges (legislators, too, in drafting rules) employed formal reasoning to prime or activate the "situation sense" of other lawyers and judges.[96] This is the same function that Margolis describes ratiocination

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Mertz, Ketti Mazzocco & Stephan Dickert, *Numeracy and Decision Making*, 17 PSYCHOL. SCI. 407 (2006).

94 *See* KARL LLEWELLYN, THE CASE LAW SYSTEM IN AMERICA 73-77, (Paul Gewirtz ed., Michael Ansaldi trans., 1989):

> The words "legal certainty" seem to evoke in most lawyers' minds an image of simply being able to apply an existing rule of law deductively. We are used to thinking like this, particularly since judicial opinions and legal discourse must always be dressed up this way so as to be socially acceptable. My claim would be, though, that for the cases which occasion difficulties, this kind of legal certainty never has existed and never will exist. . . .
>
> [Yet] [i]n spite of all this, the outcome of a dispute concerning the law is predictable to a truly amazing degree, and for that reason the law is (descriptively) certain.

95 *See* KARL N. LLEWELLYN, THE COMMON LAW TRADITION: DECIDING APPEALS 59-61, 121-57, 206-08 (1960) (examining a variety of cases through the "situation-sense" framework).

96 *See id.* at 183-91 (describing rules as forms of "singing reason" that reliably summon situation types); Karl N. Llewellyn, *On Reading and Using the Newer Jurisprudence*, 40 COLUM. L. REV. 581, 590 (1940) (examining cases to reveal that the successful appellant did not identify logical constraints on judges' reasoning but "'simply' got the court to 'see' 'the true' rule and its bearing"). Some observational study proponents of the "ideology thesis"—the view that ideological predispositions shape judging independently of legal reasoning, *see* Edwards & Livermore, *supra* note 11, at 1945—characterize their outlook as the "New Legal Realism," and claim they are refining and sharpening Llewellyn's views of judicial decisionmaking. *See* Miles & Sunstein, *supra* note 41, at 831; *see also* EPSTEIN, POSNER & LANDES, *supra* note 5, at 25-63 (characterizing the use of ideological variables in multivariate regression models to constitute a "realistic theory of judicial behavior" and castigating so-called "legalists" and "anti-realists" critics of such an approach). Legal Realism, of course, comprised a diverse set of thinkers whose various theories of adjudication varied in their systematization and ultimately were only loosely related. But the equation of Llewellyn's position, in particular, with the view that judges are motivated, consciously or unconsciously, by "political" sensibilities seems out of keeping with how Llewellyn himself understood his own work. To be sure, Llewellyn rejected the proposition that legal reasoning can be faithfully represented as the deductive application of formal rules. Nevertheless, he vehemently insisted—in opposition, in fact, to the views of certain other Legal Realists, most notably Jerome Frank, *see* Llewellyn, *supra* note 96, at

playing in professional discourse among risk experts[97] and indeed in any setting in which human beings resort to it.[98]

Margolis also identified the role that pattern recognition plays in professional judgment to explain expert–public conflicts over risk. Lacking the experience and training of experts, and hence the stock of prototypes that reliably guide expert risk assessment, members of the public, Margolis argued, were prone to one or another heuristic bias. By the same token, the experts' access to those prototypes reliably fixes their attention on the pertinent features of risks that excite cognitive biases on the part of the lay public.[99]

Based on the role of pattern recognition in professional judgment, one might make an analogous claim about judicial and lay judgments in culturally contested legal disputes. On this account, lawyers' and judges' "situation sense" can be expected to reliably fix *their* attention on pertinent elements of case "situation types," thereby immunizing *them* from the distorting influence that identity-protective cognition exerts on the judgments of legally untrained members of the public. It is thus possible that the *professional judgment of the judge*, as an expert neutral decisionmaker, embodies exactly the form of information processing most likely to counteract identity-protective reasoning, including the elements of it magnified by System 2 reasoning.

III. STUDY DESIGN AND HYPOTHESES

We performed a study to examine the impact of ideology on judicial reasoning. The study was self-consciously designed to remedy the defects in existing observational and experimental studies, and to test plausible competing hypotheses about the relationship of identity-protective cognition to lawyers' and judges' professional judgment.

A. *Design*

1. Overview

Making valid inferences about how the professional judgment of lawyers and judges interacts with identity-protective cognition requires comparing

593, 598-601—that judges can be expected to converge in their rulings based on a shared apprehension of the pertinent features of recurring "situation types." *See id*. at 589-91.

97 *See* MARGOLIS, *supra* note 81, at 67.

98 *See id*. at 49-63; MARGOLIS, *supra* note 83, at 87-111.

99 *See* MARGOLIS, *supra* note 81, at 35-36, 67-68, 94-95.

how lawyers *and* non-lawyers reason with regard to *both* legal *and* nonlegal decisionmaking tasks. That is what our study did.

2. Sample

Overall, there were 1554 subjects. Eight hundred of them consisted of adult members of the U.S. general public. Recruited and stratified for national representativeness,[100] the sample was 49% male, and 76% of its members were white, 11% African-American, and 12% Hispanic. The average age was 52. The median educational attainment was "some college," and the median income was $40,000 to $49,000.

Two hundred and fifty-three judges participated in the study. Approximately 200 responded to solicitations issued to judicial conference attendees.[101] The remainder were recruited from participants in two online CLE lectures.[102] All were state judges and consisted of a mix of roughly equal numbers of trial and appellate court members.

The sample also included 225 lawyers and 250 law students. The former were recruited via solicitations to attorneys in Connecticut, Illinois, New York, Pennsylvania, Texas, Virginia and Washington, D.C. Law student subjects were recruited from Harvard Law School, the Temple University Beasley School of Law, William & Mary Law School, and Yale Law School. The law students were a mix of first-, second-, and third-year students, but those who had not yet completed at least one semester were excluded.

In all cases, the solicitation indicated that the study was designed to enable study of legal and related forms of reasoning in members of the public, law students, lawyers, and judges. Beyond that, no information was supplied on the nature of the study.

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100 The general public sample was recruited by the public opinion research firm YouGov, which conducts online surveys and experiments on behalf of academic and governmental researchers and commercial customers (including political campaigns). The firm's general population recruitment and stratification methods have been validated in studies comparing the results of YouGov surveys with those conducted for American National Election Studies. *See* Stephen Ansolabehere & Douglas Rivers, *Cooperative Survey Research*, 16 ANN. REV. POL. SCI. 307, 320 (2013).

101 The conferences included the 2014 Annual Conference of the Council of Chief Judges of State Courts of Appeals; the 2014 Annual Education Program of the Florida Conference of District Court of Appeal Judges; the 2013 Annual Judicial Education Conference of the Texas Center for the Judiciary; and the September 2013 Advanced Science and Technology Adjudication Resource (ASTAR) Center meeting (a seminar for judges on issues in forensic proof).

102 The lectures, for which notices were issued by the National Center for State Courts and the National Judicial College, were furnished to enable judges to satisfy continuing legal education. Study solicitations were sent to participating judges, whose participation was of course optional.

3. Cultural Worldview Measures

All subjects' "cultural outlooks" were measured with abbreviated versions of the Cultural Cognition Worldview Scales (CCWS).[103] The CCWS characterize respondents' worldviews, or preferences for how society or other collective enterprises should be organized, along two orthogonal dimensions (Figure 1).[104] One of these, "hierarchy–egalitarianism," assesses how much subjects support or oppose modes of organization that tie authority to clearly delineated social roles and characteristics versus ones that view such roles and characteristics as illegitimate bases for the distribution of power and resources. The other, "individualism–communitarianism," assesses the degree to which respondents prefer modes of organization that treat individuals as responsible for securing the conditions of their own flourishing free of collective assistance or interference versus ones that treat securing individual wellbeing as a collective responsibility that takes precedence over individual interests.[105]

The CCWS measures have been featured in numerous studies involving identity-protective cognition.[106] They are best conceived of, in our view, as merely one of many potential candidate "latent variable" measures of group-based dispositions or outlooks that might be hypothesized to generate identity-protective cognition or like dynamics. Right–left political outlooks are another; CCWS measures are modestly correlated with such outlooks but have been shown to be more discerning of variance across a wide range of

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103 *See Cultural Cognition Worldview Scales (CCWS)—Long & Short Forms*, DECISION MAKING INDIVIDUAL DIFFERENCES INVENTORY, http://www.sjdm.org/dmidi/Cultural_Cognition_Worldview_Scales.html [http://perma.cc/624M-D7LB] (last visited Oct. 31, 2015).

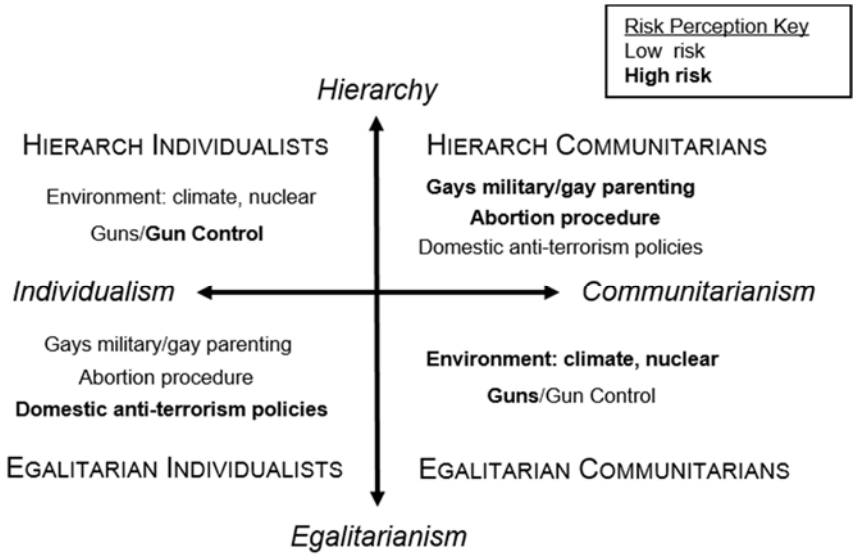
104 This scheme is itself intended to operationalize the "cultural theory of risk" associated with Mary Douglas and Aaron Wildavsky. *See* MARY DOUGLAS & AARON B. WILDAVSKY, RISK AND CULTURE: AN ESSAY ON THE SELECTION OF TECHNICAL AND ENVIRONMENTAL DANGERS (1982) *see also* Steve Rayner, *Cultural Theory and Risk Analysis* (using grid or group analysis to predict and understand individual preferences), *in* SOCIAL THEORIES OF RISK 83, 87-91 (Sheldon Krimsky & Dominic Golding eds., 1992).

105 Dan M. Kahan, *Cultural Cognition as a Conception of the Cultural Theory of Risk*, *in* HANDBOOK OF RISK THEORY: EPISTEMOLOGY, DECISION THEORY, ETHICS AND SOCIAL IMPLICATIONS OF RISK 725, 730-35 (R. Hillerbrand et al. eds., 2012).

106 *See generally* Kahan, *supra* note 13 (providing examples of studies that have used CCWS measures to analyze respondents' perceptions of various social issues, including environmental problems, nanotechnology, and human-papillomavirus (HPV) vaccinations for schoolgirls).

contested policy,[107] risk,[108] and legal issues. [109] They also have been shown to display psychometric properties superior to other latent-disposition scales commonly used to study public risk perceptions.[110]

Figure 1: Cultural Cognition of Risk



Note: "Cultural cognition of risk" refers to the tendency of individuals to form perceptions of risk that reflect and reinforce their commitments to affinity groups whose members share values that can be characterized along two orthogonal dimensions: "hierarchy–egalitarianism" and "individualism–communitarianism."[111]

The conventional short-form version of the CCWS instrument includes twelve items, six each for the "individualism–communitarianism" and

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[107] *See* John Gastil, Don Braman, Dan Kahan & Paul Slovic, *The Cultural Orientation of Mass Political Opinion*, 44 PS: POL. SCI. & POL. 711 (2011) (concluding that cultural worldview scales display more variance among respondents and are less sensitive to differences in political sophistication on policy issues such as gun control, universal health care, elimination of estate taxes, and restricting carbon emissions).

[108] *See* Kahan, Peters, Wittlin, Slovic, Ouellette, Braman & Mandel *supra* note 16, at 732-35 (describing a study finding that cultural worldviews have greater explanatory power than political measures for climate change and nuclear power risk perceptions).

[109] *See* Kahan, Hoffman, Braman, Evans & Rachlinski, *supra* note 46, at 884 n.118 (finding that cultural worldviews are more discerning of biased perceptions of fact in legal controversy).

[110] *See* Wen Xue, Donald W. Hine, Natasha M. Loi, Einar B. Thorsteinsson, & Wendy J. Phillips, *Cultural Worldviews and Environmental Risk Perceptions: A Meta-Analysis*, J. ENVTL. PSYCHOL., Dec. 2014, at 249, 257.

[111] *See id.*; Dan M. Kahan & Donald Braman, *Cultural Cognition and Public Policy*, 24 YALE L. & POL'Y REV. 149, 151-57 (2006).

"hierarchy–egalitarianism" worldview dimensions. In this study, an abbreviated version of CCWS consisting of only four items—two per dimension—was employed:

> CHARM. Sometimes government needs to make laws that keep people from hurting themselves.
>
> IPRIVACY. The government should stop telling people how to live their lives.
>
> HEQUAL. We have gone too far in pushing equal rights in this country.
>
> EWEALTH. Our society would be better off if the distribution of wealth was more equal.

Subjects responded to each item by indicating their level of agreement on six-point scale ("strongly disagree," "moderately disagree," "slightly disagree," "slightly agree," "moderately agree," "strongly agree").

The decision to administer only four items in this study was made to minimize the probability of noncompletion by judges, who it was anticipated might be reluctant to respond to a high number of items assessing their values. It was anticipated that scales constructed from even these four items, however, would display acceptable psychometric properties insofar as the items in question had been shown in previous studies to have the highest correlation with the latent construct or disposition associated with the respective scales from which they were drawn.

Factor analysis—which assesses the covariance patterns of prospective indicators of a latent variable measure—confirmed that variance in the subjects' responses to the four items was best explained by two separate orthogonal factors, each of which loaded on (or were correlated with) the appropriate pairs of items. Scales formed with the two pairs of items reflected acceptable levels of measurement precision: in the case of hierarchy–egalitarianism, Cronbach's $\alpha = 0.73$; in the case of individualism–communitarianism, $\alpha = 0.64$.

Factor scores, which weight items in proportion to their correlation with the underlying latent construct, were used as measures of the subjects' "hierarchy–egalitarian" and "individualism–communitarian" worldviews.[112] Standardized with means at 0, the measures were valenced so that positive scores denoted either a relatively hierarchical or a relatively individualistic disposition and negative scores either a relatively egalitarian or communitarian disposition on the indicated scale.

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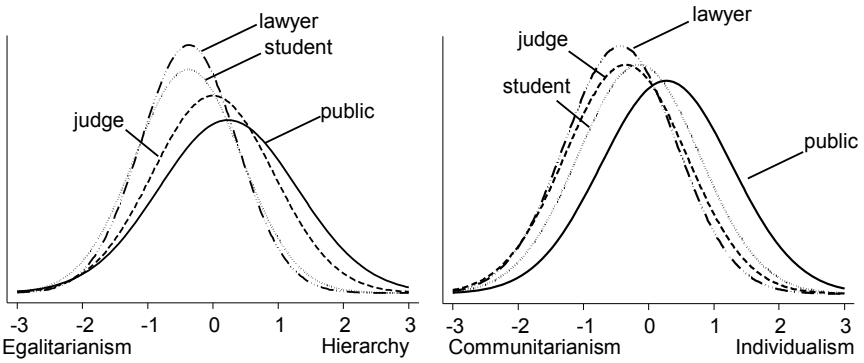
112 *See generally* ROBERT F. DEVELLIS, SCALE DEVELOPMENT: THEORY AND APPLICATIONS 103-37 (2d ed. 2002).

The cultural worldview items were administered to subjects *after* their completion of the legal problem and risk-perception tasks featured in the study. This particular decision was made to avoid the risk that exposure to those items would independently arouse identity-protective motivations that might affect subjects' analyses of the statutory interpretation problems.

Figure 2: Cultural Worldview Distributions



Note: Distributions of subject types' worldviews. Scores are standardized: 0 is the sample mean, and units are standard deviations from the mean. Subject type explained 7% of the variance in the hierarchy–egalitarianism scale and 9% of the variance in the individualism–communitarianism scale.

Examination of responses to the worldview items suggested that variation between subject types was modest. Members of the general public sample were more hierarchical (M = 0.24, SEM = 0.04) and individualistic (M = 0.27, SEM = 0.03) than the other subject types. Judges were close to average in their hierarchy–egalitarian scores (M = -0.01, SEM = 0.06), while students (M = -0.38, SEM = 0.05) and lawyers (M = -0.37, SEM = 0.05) were modestly egalitarian. The students were close to average in their individualism–communitarianism scores (M = -0.15, SEM = 0.06), while the judges (M = -0.36, SEM = 0.06) and lawyers were modestly communitarian (M = -0.43, SEM = 0.06). As illustrated in Figure 2, differences between the outlooks of different subject types were relatively minor in comparison to the variation within the sample as a whole.

The hierarchy–egalitarian and individualism–communitarian scales so formed are treated as continuous measures for purposes of testing the study hypotheses. For expositional convenience, however, we will frequently refer to subjects as either "Hierarchical Individualists," "Hierarchical Communitarians," "Egalitarian Individualists," or "Egalitarian Communitarians." When used in connection with summary or descriptive analyses, these labels will be applied

based on subjects' scores in relation to the means on the two scales. In multivariate testing, the labels will be used to refer to subjects modeled as possessing combinations of worldview scores either one standard deviation above (for "Hierarchical-" and "-Individualist") or one standard deviation below the scale means (for "Egalitarian-" and "-Communitarian").

4. Statutory Interpretation Problems

Subjects were instructed to imagine they were judges and indicate how they would rule in two cases. Each case featured a statutory ambiguity of the sort familiar to lawyers and judges.[113] Resolving the ambiguity was necessary to decide whether the statute, properly construed, applied to the behavior of a defendant or group of defendants in a government enforcement proceeding (civil in one case, criminal in the other).

Each problem also involved an experimental manipulation: the identity of a party involved in the case was varied in a manner that had no analytical bearing on how the statutory ambiguity should be resolved but that was expected nevertheless to imbue the outcome with a cultural meaning or resonance that would generate identity-protective reasoning. Any tendency on the part of culturally diverse decisionmakers to adjust their interpretations to support the outcomes most congenial to their group commitments would thus supply unambiguous evidence of the susceptibility of their reasoning to values *extrinsic* to law.[114]

a. *Littering*

The first case, "Littering," involved a statutory provision forbidding "littering, disposing, or depositing any form of garbage, refuse, junk, or other debris" on the grounds of any national wildlife preserve.[115] The defendants had admittedly left unattended in such a preserve—a portion of desert along the United States–Mexico border—400 ten-gallon reusable plastic water dispensers, which they intended to be used and periodically refilled. The subjects were instructed to play the role of a trial court judge ruling on a motion to dismiss a civil penalty action against the defendants. As spelled out clearly in the case vignette, proper disposition of the motion turned on whether the defendants' conduct could be deemed "depositing . . . junk" or "debris."

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113 The statutory interpretation problems and other components of the study instrument appear in Appendix B.

114 *See supra* notes 36–37 and accompanying text.

115 *Cf.* Disposal of Waste, 50 C.F.R. § 27.94(a) (2014) (containing slightly different language).

The experimental manipulation related to the identity of the defendants. For half of the subjects, the defendants were identified as immigrant aid workers, who anticipated that the water would be consumed by aliens crossing the desert to enter the United States illegally ("immigrant aid version"). For the other half, the defendants were identified as construction workers, who intended to drink the water from the containers themselves while working on a border fence designed to prevent illegal entry into the United States ("construction workers version").

The party-identity manipulation in Littering does not, in our professional judgment as a group of lawyers and one judge, have any bearing on how the statutory ambiguity should be resolved as a matter of law. Nevertheless, we anticipated the manipulation would trigger opposing identity-protective motivations among subjects of relatively hierarchic–individualistic outlooks, on the one hand, and subjects of relatively egalitarian–communitarian ones, on the other.

Hierarchical individualists expect authority and status to be distributed on the basis of conspicuous, largely stable social roles and resent collective interference with the individual prerogatives that attend those roles. Egalitarian communitarians, in contrast, resent social orderings that feature sharp rankings in power and entitlements and treat securing conditions of individual flourishing as a collective responsibility that trumps individual entitlements.[116]

It seems reasonable to expect that individuals with these outlooks would tend to disagree about how readily to accept immigration into the United States, or to excuse illegal entry by aliens seeking to escape from social deprivation elsewhere. Indeed, consistent with the dynamic of cultural cognition, they tend to form opposing perceptions of the risk that illegal immigration poses to societal wellbeing in the United States.[117]

The party-identity manipulation in Littering was designed to affect the motivating stake of Egalitarian Communitarians and Hierarchical Individualists by altering the social meaning of a judgment against the defendants. A legal determination that the defendant immigrant-aid group was "depositing junk" or "debris" in the desert by leaving refillable water containers there for use by prospective illegal immigrants would be identity-affirming for Hierarchical Individualists, but identity-threatening or identity-denigrating for Egalitarian Communitarians. One would thus

116 Rayner, *supra* note 104; Kahan & Braman, *supra* note 111.

117 *See* Dan Kahan, *U.S. Risk-Perception/Polarization Snapshot*, CULTURAL COGNITION PROJECT AT YALE L. SCH. (Dec. 30, 2011, 10:00 AM), http://www.culturalcognition.net/blog/2011/12/30/us-risk-perceptionpolarization-snapshot.html [http://perma.cc/565X-P86V].

expect, if identity-protective cognition shaped assessments of the case, that Hierarchical Individualists would be substantially more inclined to find a violation than Egalitarian Communitarians in the "immigrant aid version" of the problem.

The social-meaning valence of the case, and the corresponding unconscious motivations, would be flipped around, in contrast, in the "construction worker" version. There it would be Hierarchical Individualists whose identities would be denigrated and Egalitarian Communitarians whose identities would be affirmed by a ruling that workers building an exclusionary fence were polluting the desert. One would thus expect Egalitarian Communitarians to be more inclined to find a violation than Hierarchical Individualists in that version of the problem.

b. *Disclosure*

The second case, "Disclosure," involved a familiar "mistake of law" issue. The statute in Disclosure made it a crime for a government official to "knowingly violate" a prohibition on "disclosing" to the public "confidential investigatory information relating to an identifiable private citizen." The defendant, a police officer, admittedly disclosed to a private party what the officer knew to be "confidential investigatory information." Nevertheless, he claimed not to "know" that he was "violat[ing]" any statutory prohibition. His ignorance of the prohibition, the vignette made clear, would not furnish the officer a defense if the term "knowingly" was construed to relate only to the confidential nature of the information, to its release, and to the status of the information recipient as a member of the public rather than another government official; if, in contrast, "knowingly" were construed to relate in addition to the existence of the prohibition on disclosing such information, then the defendant officer's ignorance would be a defense.[118] The subjects were instructed to evaluate these alternative readings of the statute for the purpose of ruling on the defendant's appeal of the trial court's refusal to instruct the jury that unawareness of the legal prohibition on disclosure would in fact defeat proof of a crime.

The experimental manipulation in this case concerned the identity of the party to whom the defendant had made the disclosure. In the "pro-choice

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118 *Compare* United States v. Int'l Minerals & Chem. Corp., 402 U.S. 558, 563 (1971) (holding that the term "knowingly" applies only to the defendant's mental state regarding her conduct, not to her mental state regarding the regulation's existence), *with* Liparota v. United States, 471 U.S. 419, 432 (1985) (holding that "in a prosecution for violation of [7 U.S.C.] § 2024(b)(1) [(1982)] the Government must prove that the defendant knew that his acquisition or possession of food stamps was in a manner unauthorized by statute or regulations").

center" version of the problem, subjects were advised that the officer had leaked the investigatory information to "a noncommercial 'family planning' center that provides *free information on birth control and abortion services*"; the information supplied by the defendant police officer was that an individual known to police to belong to an anti-abortion group had applied to the center for employment under false pretenses. In the "pro-life center" version of the problem, study subjects were advised that the information recipient was a "religious 'family planning' center that counsels women on *alternatives to abortion*"; the information was that an individual known to police to belong to a pro-choice group had applied to the center for employment without disclosing this part of his background.

Of no consequence to the "mistake of law" issue in the case, the manipulation of the information-recipient's identity in Disclosure was expected to provoke identity-protective cognition in individuals who are either relatively hierarchical and communitarian, on the one hand, or relatively egalitarian and individualistic, on the other. The former adhere to social norms that assign individuals role-based obligations (e.g., "mother" or "religious adherent") to contribute to the wellbeing of one or another collective entity (e.g., "family," or "church") that is itself rich with status-defined obligations. The latter, in contrast, chafe at distinctions in status and authority that do not originate in voluntarily assumed private agreements, and reject, too, the idea that individuals have unchosen obligations to subordinate their own well-being to the interests of any collective entity.

The legal right to abortion is an issue that tends to divide Hierarchical Communitarians and Egalitarian Individualists (particularly female ones[119]). The former see abortion "at will" as devaluing the social status of women who successfully occupy matriarchal roles; the latter view legal protection of the "right to choose" as a token of society's commitment to assuring that individual women, just like individual men, should be afforded esteem for mastering market and professional roles.[120] Again, in line with cultural cognition, people with these outlooks tend to credit or dismiss asserted abortion procedure health risks in patterns reflecting the opposing cultural meanings that such individuals attach to abortion rights.[121]

The identity-manipulation in Disclosure was aimed at varying the identity-protective stake that individuals with these cultural worldviews

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119 *See generally* KRISTIN LUKER, ABORTION AND THE POLITICS OF MOTHERHOOD (1984).

120 *Id.* at 158-92 (discussing the different worldviews of pro-choice and pro-life individuals).

121 *See* Dan M. Kahan, Donald Braman, John Gastil, Paul Slovic & C. K. Mertz, *Culture and Identity-Protective Cognition: Explaining the White-Male Effect in Risk Perception*, 4 J. EMPIRICAL LEGAL STUD. 465, 489-491 (2007).

would form in the outcome of the Disclosure case. In the "pro-life version" of the problem, Hierarchical Communitarians, we surmised, would experience an unconscious motivation to extend a defense to the police officer: such an outcome, we reasoned, would affirm their worldview by exonerating from criminal censure a state official who acted to protect a pro-life family counseling center from subversion. Precisely because it treats such an actor as unworthy of legal denunciation, Egalitarian Individualists, we predicted, would be motivated to deny the officer the defense in that version of the problem. These positions would be reversed in the "pro-choice version": legally condemning the officer for tipping off the pro-choice family-counseling center would be identity-affirming for Egalitarian Individualists, we surmised, and identity-denigrating for Hierarchical Communitarians.[122]

5. Risk Perception Measures

In addition to the statutory interpretation problems, the study included a risk-perception battery. This portion of the study directed subjects to rank on an eight-point scale the seriousness of the risk "pose[d] to human health, safety, or prosperity" by a given technology, behavior, or state of affairs. Variance in responses to this form of risk-perception measure has been shown to be strongly correlated with variance in more fine-grained factual beliefs (e.g., in the case of "climate change," whether human activity is causing global warming;[123] or in the case of "private gun possession," whether allowing concealed carrying of firearms in public has an impact on crime rates[124]).

The risk measures were combined to form two scales. One—consisting of aggregated responses to items relating to global warming, nuclear power, air pollution, and water pollution—measured environmental risk perceptions (α = 0.80). The other, consisting of aggregated responses to items relating to the legalization of marijuana, teenage pregnancy, domestic terrorism, and illegal drug trafficking measured social-deviance risk perceptions (α = 0.65).

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122 *Cf.* Kahan, Hoffman, Braman, Evans & Rachlinski, *supra* note 46 (finding that Hierarchical Communitarians and Egalitarian Individualists polarized on perception of facts after watching a video of a protest described as either an anti-abortion demonstration or demonstration protesting discrimination on the basis of sexual orientation).

123 *See* Dan M. Kahan, *Climate-Science Communication and the Measurement Problem*, 36 ADVANCES IN POL. PSYCHOL. 1, 8-9 (2015) (finding that risk perception of climate change is correlated with the belief that human activity is its cause).

124 *See* Yoav Ganzach, Shmuel Ellis, Asya Pazy & Tali Ricci-Siag, *On the Perception and Operationalization of Risk Perception*, 3 JUDGMENT & DECISION MAKING 317 (2008); Elke U. Weber, Ann-Renée Blais & Nancy E. Betz, *A Domain-Specific Risk-Attitude Scale: Measuring Risk Perceptions and Risk Behaviors*, 15 J. BEHAV. DECISION MAKING 263 (2002).

Items included in the risk perception battery were selected on the basis of previous studies that had established them to be ones that trigger identity-protective cognition in relation to the identities associated with the cultural cognition worldview scales. We thus anticipated that the environmental risk perception scale would divide subjects inclined toward an egalitarian–communitarian worldview from ones inclined toward a hierarchical–individualistic one. We expected the social-deviancy risk scale to divide subjects inclined toward egalitarian-individualist and hierarchical-communitarian worldviews, respectively.[125]

B. *Hypotheses*

1. Four Contenders

As indicated, the rationale for the design of the statutory interpretation problems and the selection of risk-battery items was the expected impact they would have in triggering identity-protective cognition. The central aim of the study, however, was to test whether professional judgment of the sort generally exercised by judges and lawyers would counteract this species of motivated reasoning. Specifically, the array of problems, combined with the mix of different types of study subjects, was geared to assessing the relative plausibility of four distinct hypotheses.

a. *Universal Vulnerability*

One of the hypotheses was that the status of the subject—member of the public, law student, lawyer, or judge—would make no difference. All of them would display the same vulnerability to identity-protective reasoning in both the legal-problem and risk-perception response measures. We will call this the Universal Vulnerability (UV) hypothesis. Results consistent with UV would vindicate the dominant scholarly view that judges are indeed "ideologically biased"—or "politicians in robes."

Indeed, corroboration of UV would help to reinforce the two main pillars of research now thought to support the view that judicial decisionmaking is "ideological." Such results would constitute more persuasive grounds for crediting the view that judges are politically biased than existing identity-protective cognition studies, which, as indicated, attribute to judges decisionmaking biases observed in general population samples. Findings

125 *See generally* Dan M. Kahan & Donald Braman, *Cultural Cognition of Public Policy*, 24 YALE J.L. & PUB. POL'Y 147, (2006); Aaron Wildavsky & Karl Dake, *Theories of Risk Perception: Who Fears What and Why?*, DAEDALUS, Fall 1990, at 41, 44.

consistent with UV would also help to quiet concerns about the methodological soundness of observational studies supporting the "ideology thesis." A finding that members of the study's judicial sample were as prone to identity-protective cognition as members of the general-public sample would not only be free of the distorting selection bias associated with the Priest–Klein effect.[126] It would also furnish proof of ideological bias undiluted by the failure of observational studies to distinguish the licit contribution of values intrinsic to valid legal reasoning from the illicit contribution of values extrinsic to valid legal reasoning.[127]

b. *Identity-Protective Cognition Immunity*

Another hypothesis, which we call "identity-protective cognition immunity" (ICI), stands UV on its head. ICI posits that the form of training that lawyers receive effectively inoculates them from identity-protective cognition. If this is so, we would expect both lawyers and judges to avoid the forms of identity-protective cognition predicted to be triggered in members of the general-population sample. They would display this resistance to biased reasoning, moreover, for *both* the statutory interpretation problems *and* the risk-perception battery, for, on this view, legal training is seen as effectively negating vulnerability to identity-protective reasoning generally.

A result consistent with ICI would, frankly, be shocking. As explained, previous studies show that identity-protective reasoning, far from being mitigated, appears to be *aggravated* by greater proficiency in the forms of critical reasoning that System 2 information processing comprises.[128] Because legal training focuses primarily on critical reasoning, it would thus be quite remarkable to discover that it supplies a form of immunity to identity-protective reasoning generally. On the contrary, the phenomenon of motivated System 2 reasoning supplies greater reason to expect UV than ICI to be correct.[129]

c. *Domain-Specific Immunity*

A more plausible alternative to UV is what we will call the "domain-specific immunity" (DSI) hypothesis. DSI predicts that lawyer and judge members of the sample will display resistance to identity-protective cognition but only in their responses to the legal-problem component of the study. In

126 *See supra* notes 22–26 and accompanying text.

127 *See supra* notes 30–35 and accompanying text.

128 *See supra* notes 77–78 and accompanying text.

129 *See* Kahan, *supra* note 16, at 409; Kahan, Peters, Dawson & Slovic, *supra* note 79, at 17.

response to the risk-perception component, DSI posits that lawyers and judges will display the same vulnerability that members of the public do to the pressure to assimilate their assessments of information to conclusions that affirm the status and outlooks of their cultural groups.[130]

DSI is rooted in Margolis's understanding of professional judgment as a species of pattern recognition. As we discussed,[131] Llewellyn's concept of "situation sense" furnishes an account of legal professional judgment consistent with Margolis's. On this account, "habits of mind"[132]—consisting of effortful, System 2 forms of critical reasoning, certainly, but also intuitive, perceptive forms of cognition—equip lawyers, including judges, with a reliable capacity to fix their attention on the features of a controversy pertinent to its resolution. They also inure them to the influence of extraneous considerations that predictably bias the judgment on non-legally trained members of the public in much the same way that risk experts are inured to those biases on Margolis's account.[133] One of the sources of bias that lawyers and judges' professional judgment would protect them from, according to the DSI hypothesis, is identity-protective cognition.

It is worth specifying with more precision what an outcome consistent with DSI would look like in the legal problem portion of the study. One could interpret Llewellyn's view of "situation sense," understood as an instance of the form of professional judgment Margolis describes, as implying that judges will uniformly agree on how all or almost all legal problems should be resolved. But in our view, this would be closer to a caricature than a plausible rendering of the concept of "situation sense." A more realistic (as it were) conception of "situation sense," we submit, can usefully be understood as predicting that lawyers and judges will largely agree on case outcomes, and that when they do not, they will still agree on what *sorts of considerations* are appropriate to the reasoned disposition of such controversies. On this view, when one lawyer or judge disagrees with another's view of what the "correct" decision is in a particular case, he or she will still be able to recognize that decision as validly decided because (or so long as) it is grounded in considerations that are indeed pertinent to its resolution under the law.

A decision based on ideological considerations *extrinsic* to the legal rule or doctrine that governs a controversy (e.g., a cultural affinity with one of the parties) will be recognized by lawyers and judges as *invalid* whether or not they agree with the outcome. DSI, then, predicts not necessarily that the

130 *See* Dane & Pratt, *supra* note 85, at 43.

131 *See supra* notes 94–96 and accompanying text.

132 *See* MARGOLIS, supra note 15, at 49.

133 *See id.* at 35-36, 67-68, 94-95.

lawyers and judges will uniformly agree on the outcomes of the *Littering* and *Disclosure* problems, although one might expect that they will be largely in agreement. It predicts only that differences of opinion among the lawyer and judge study participants will *not* reflect differences in those judge' cultural worldviews.

But again, DSI predicts that judges and lawyers will reliably converge on decisionmaking factors independent of their cultural outlooks *only* in the legal-problem component of the study because only that component of the study features the exercise of legal professional judgment.[134] The outcome most consistent with DSI, then, would be one in which judges and lawyers resist identity-protective cognition only with respect to the legal-problem component and not the risk-perception component.

d. *Acquired Impartiality*

A final conjecture, which we call the Acquired Neutrality (AN) hypothesis, predicts that only judges and not lawyers will display resistance to identity-protective reasoning. On this account, what confers judges' immunity to identity-protective reasoning is not the training and experience common to membership in the legal profession, but instead the habitual, willed exercise of neutrality that is peculiar to the task of judging. Conceivably, this acquired immunity to identity-protective reasoning might apply across all manner of domain; or alternatively, it might be more limited, negating identity-protective cognition in judges only when they are engaged in the form of reasoning that they use to decide cases. Under the former view, *AN* predicts that judges, but not lawyers, will resist identity-protective cognition in their response to both the legal-problem portion of the study and the risk-perception portion. Under the latter, *AN* predicts judges alone will avoid the influence of unconscious partisan reasoning, but only in the legal-problem component of the study.

2. Law Students

What about law students? Obviously, if UV is correct, we should expect them, like lawyers and judges and members of the public generally, to display identity-protective reasoning in their responses to all of the study outcome measures. The same would be true under AI.

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134 *See* Dane & Pratt, *supra* note 85, at 43 ("Because complex schemas develop in a particular domain (one's area of expertise), they are more likely to lead to effective decisions in that domain than when used in a different domain or context. Thus, complex managerial schemas may serve a manager well at the office but may lead to inaccurate intuitive judgments at home.").

ISI and DSI, however, do not necessarily imply that law students will resist identity-protective cognition either. Students are at only an intermediate stage of professionalization; their "situation sense," one might thus suppose, is imperfect. On this view, then, ISI and DSI could be understood to predict that law students would display identity-protective cognition, but to a smaller degree than members of the public generally.

The Redding–Reppucci study found that, while judges were influenced by political commitments on a determination (the constitutionality of the death penalty) that turned on normative commitments *intrinsic* to law, they were unaffected by those commitments in making evidentiary rulings that were analytically distinct from such commitments.[135] The same was not true of law students.[136] As a result of that study's design, there is ambiguity about the inferences that can be drawn from the results.[137] Nevertheless, a finding in this study that the legal-problem responses of students, but *not* of judges, display sensitivity to the cultural congeniality of the experimentally manipulated case outcomes would supply reason to attribute the results in Redding–Reppucci study to the power of professional judgment to counteract unconscious political predispositions.

C. *Analytic Method and Statistical Power*

The study hypotheses feature competing predictions about the impact of identity-protective cognition on the various types of subjects in both the legal-problem and risk-perception components of the study. In the legal-problem version of the study, we anticipated using multivariate regression analysis to test for three-way interactions between subject type, cultural worldview predictors, and experimental assignment in the statutory-interpretation problem component of the study.[138] For the risk-perception component, we anticipated using multivariate regression analysis to test for two-way interactions between cultural worldviews and subject type predictors.

We anticipated using a hybrid "frequentist-Bayesian" testing strategy for the legal problem component of the study. In conventional null hypothesis

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135 Redding & Reppucci, *supra* note 68.

136 *Id.*

137 *See supra* notes 68–70 and accompanying text.

138 *See generally* JACOB COHEN, PATRICIA COHEN, STEPHEN G. WEST & LEONA S. AIKEN, APPLIED MULTIPLE REGRESSION/CORRELATION ANALYSIS FOR THE BEHAVIORAL SCIENCES 555-56 (2003); Charles M. Judd, *Everyday Data Analysis in Social Psychology: Comparisons of Linear Models*, *in* HANDBOOK OF RESEARCH METHODS IN SOCIAL AND PERSONALITY PSYCHOLOGY 370, 374-75 (Harry T. Reis & Charles M. Judd eds., 2000).

testing, a hypothesis is deemed "corroborated" if one can "reject the null hypothesis" at "$p < 0.05$"—that is, if one can say that the probability is less than 5% that one would have obtained an experimental effect as big as (or bigger than) the one observed were the "true effect" zero.[139] We anticipated using this form of analysis to assess whether different subject types' responses displayed the relationship with their cultural worldviews that would suggest the influence of identity-protective cognition, and whether that impact differed in degree among different types of subjects.

In contrast, Bayesian hypothesis testing assesses the probability of obtaining the effect observed in the experiment for two or more competing hypotheses. The relative magnitude of those probabilities is the equivalent of a Bayesian "likelihood ratio." For example, one might say that observing a particular set of results would be 5—or 500 or 0.2 or 0.002, etc.—times as likely if one hypothesis were true than if a rival one were.[140]

The likelihood ratio does not reflect the probability that a hypothesis is true. Instead, it reflects the degree to which one should, based on the evidence in question, revise one's previous assessment of the probability of truth one attaches to a hypothesis or proposition.[141] In an experimental setting, the likelihood ratio can be treated as an index of the weight with which the evidence supports one hypotheses in relation to the another.[142]

Under Bayes' theorem, the strength of new evidence (the likelihood ratio) is analytically independent of one's prior assessment of the probability of the hypothesis in question. The weight to be assigned any particular piece of evidence, in other words, is to be determined on the basis of the validity of the methods and inferences that produced it—not on whether the evidence

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139 *See generally* ROBERT P. ABELSON, STATISTICS AS PRINCIPLED ARGUMENT 40 (1995); Jacob Cohen, *The Earth Is Round (*p<*05)*, 49 AM. PSYCHOLOGIST 997 (1994).

140 *See* Ward Edwards, Harold Lindman & Leonard J. Savage, *Bayesian Statistical Inference for Psychological Research*, 70 PSYCHOL. REV. 193 (1963); Steven N. Goodman, *Introduction to Bayesian Methods I: Measuring the Strength of Evidence*, 2 CLINICAL TRIALS 282, 287-288 (2005); Michael Lavine, *What Is Bayesian Statistics and Why Everything Else Is Wrong*, 20 UMAP J. 165, 166-167 (1999). *See generally* I. Jack Good, *Weight of Evidence: A Brief Survey*, *in* BAYESIAN STATISTICS 2: PROCEEDINGS OF THE SECOND VALENCIA INTERNATIONAL MEETING 249 (J. M. Bernardo, et al. eds., 1985) (describing evolution and benefits of use of likelihood ratio as devices for assessing evidentiary "weight").

141 *See* Richard O. Lempert, *Modeling Relevance*, 75 MICH. L. REV. 1021, 1026 (1977); *cf.* Michael O. Finkelstein & William B. Fairley, *A Bayesian Approach to Identification Evidence*, 83 HARV. L. REV. 489, 502 (1970) ("[A] defendant could be a thousand times more likely to be guilty than someone selected at random and still more likely to be innocent than guilty.").

142 *See generally* I. J. Good, *Causal Tendency, Necessitivity and Sufficientivity: an Updated Review*, *in* 1 PATRICK SUPPES, SCIENTIFIC PHILOSOPHER: PROBABILITY AND PROBABILISTIC CAUSALITY 293 (Paul Humphrey ed., 1994); Good, *supra* note 140.

supports or challenges what one already believes.[143] Because neither the validity nor the weight of our study results thus depends on holding any particular prior beliefs about the political bias of judges, we report only the indicated likelihood ratios and leave it to readers to adjust their own beliefs accordingly.

Based on previous studies, we determined that 800 subjects would be more than ample for observing meaningful identity-protective-reasoning effects. Sample size targets for judges, lawyers, and law students were determined after analysis of the general-public sample results, the effect sizes of which indicated that *n*'s of 225 would generate over a 0.95 chance of observing a comparable one, and over an 0.80 chance of observing one even half as large, at $p < 0.05$.[144]

IV. RESULTS

A. *Legal Reasoning*

We consider first how the subjects responded to the legal-problem component of the study. We start with summary analyses based on simple tabulations of the responses of various subject types and worldviews in the different versions of the two statutory interpretation problems. We then present multivariate analyses designed to test the study hypotheses.

1. Summary Data

a. *Outcomes by Subject Type*

Taken as a whole, members of the public displayed little agreement on the proper outcomes in the legal problems. Regardless of the version of the problem analyzed, members of the public split nearly 50–50 on whether the defendant in Disclosure had violated the statute—that is, on whether the statute should be read to require proof of "knowledge" of the illegality of his

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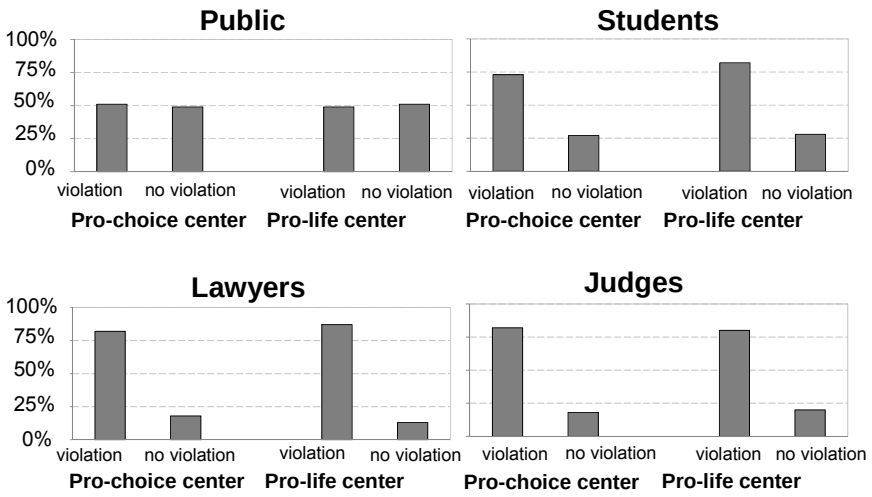
143 Psychologically speaking, the mistake of deriving the likelihood ratio or weight to be assigned new evidence from one's prior beliefs, or more generally from one's willingness to assent to the truth of the hypothesis, is confirmation bias. *See generally* STANOVICH, *supra* note 93; Matthew Rabin & Joel L. Schrag, *First Impressions Matter: A Model of Confirmatory Bias*, 114 Q.J. ECON. 37 (1999).

144 The conventional threshold for statistical power—a measure of the likelihood of observing a posited effect size at a specified threshold of statistical significance, conditional on sample size—is 0.80. *See generally* Stephen G. West, Jeremy C. Biesanz, & Steven C. Pitts, *Causal Inference and Generalization in Field Settings: Experimental and Quasi-Experimental Designs*, *in* HANDBOOK OF RESEARCH METHODS IN SOCIAL AND PERSONALITY PSYCHOLOGY 40, 53 (Harry T. Reis & Charles M. Judd eds., 2000).

disclosure of confidential investigatory information to either the "pro-life" or "pro-choice" family planning centers (Figure 3). Members of the public assigned to the "construction worker" version of Littering were also close to equally divided on whether leaving reusable water containers unattended in the desert constituted "depositing . . . junk" or "debris" in a wildlife preserve; those assigned to the "immigrant aid" version, however, favored treating such behavior as a violation of the statute by a 65% to 35% margin (Figure 4).

The statutory interpretation problems in our study featured genuine ambiguities. Dictionary definitions and rules of grammar did not compel one result over the other in either problem. It is thus not surprising that members of the public displayed a high level of disagreement on the proper outcomes.

Figure 3: *Disclosure* Problem: Decisions Overall

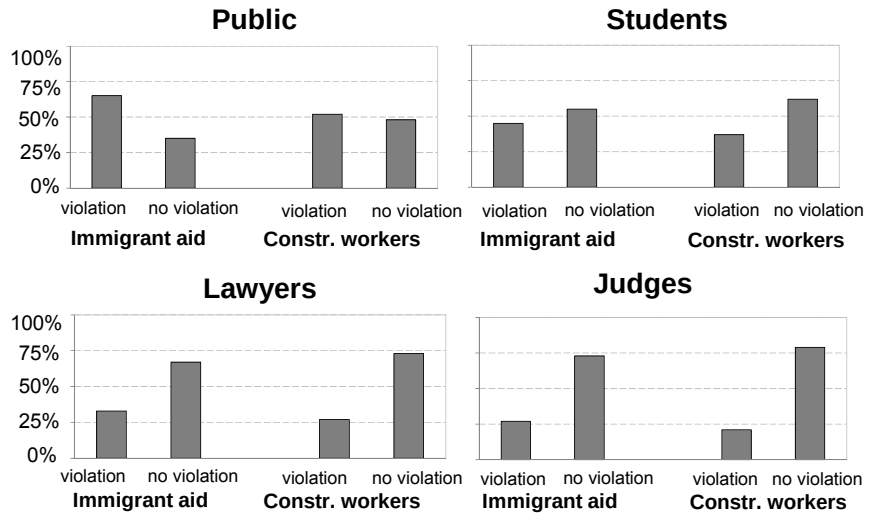


Note: Panels reflect the percentage of indicated type of subjects who selected indicated results in specified versions of the Disclosure problem.

The situation was quite different, however, among both the lawyers and the judges who participated in our study. Regardless of the version of Disclosure they evaluated, decided majorities of both of these types of subjects indicated that the defendant police officer had indeed violated the statute (Figure 3). In Littering, decided majorities concluded that placing unattended reusable water containers in the desert did *not* constitute "discarding . . . debris" in a wildlife preserve—whether done by immigrant aid or construction workers (Figure 4). Most lawyers and judges, then, perceived something in each problem that guided them to a consensus interpretation, notwithstanding the ambiguity of the statutory language.

The overall level of agreement among the law students was intermediate between the ones observed among members of the public, on the one hand, and among lawyers and judges, on the other. In Disclosure, the students, like the lawyers and judges, were inclined to find a statutory violation in both the "pro-life center" and "pro-choice center" versions (Figure 3).

Figure 4: *Littering* Problem: Decisions Overall



Note: Panels reflect the percentage of indicated type of subjects who selected indicated results in specified versions of the Littering problem.

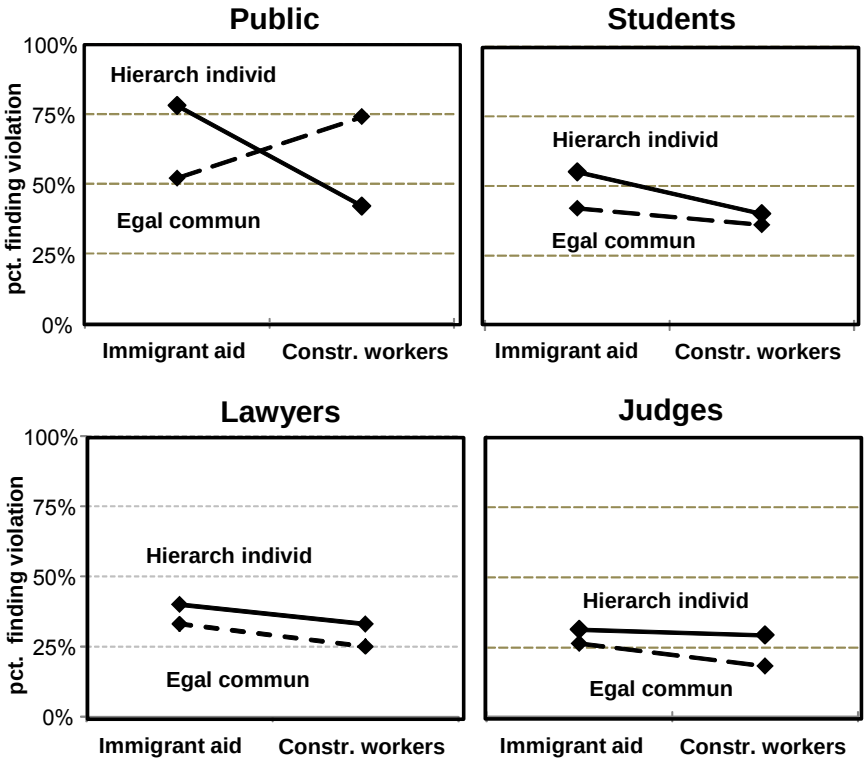
The students displayed much less agreement on the proper outcome in Littering. In the "immigrant aid" version, they were almost evenly divided. They favored finding no violation in the "construction worker" version, although by a margin (62%:38%) that fell short of the ones by which lawyers and judges supported that disposition in both versions of the problem (Figure 4).

b. *Outcomes in Relation to Subject Worldviews*

There was a noticeable relationship between the cultural worldviews of members of the public and how they ruled in the legal problems (Figure 5). Thus, in Littering, 77% of the Hierarchical Individualists assigned to the "immigrant aid" version but only 41% assigned to the "construction worker" version supported finding a violation. For Egalitarian Communitarians, the relationship was reversed: only 52% supported finding a violation in the

"immigrant aid" version, whereas 74% supported finding a violation in the "construction worker" version. These patterns were consistent with the study predictions of how identity-protective cognition would influence subjects with these outlooks in the Littering case.

Figure 5: Outcomes by Subject Type and Cultural Worldview in *Littering*



Note: Panels reflect the percentage of subjects of type and worldview who indicated support for finding a violation in one or another version of the Littering problem.

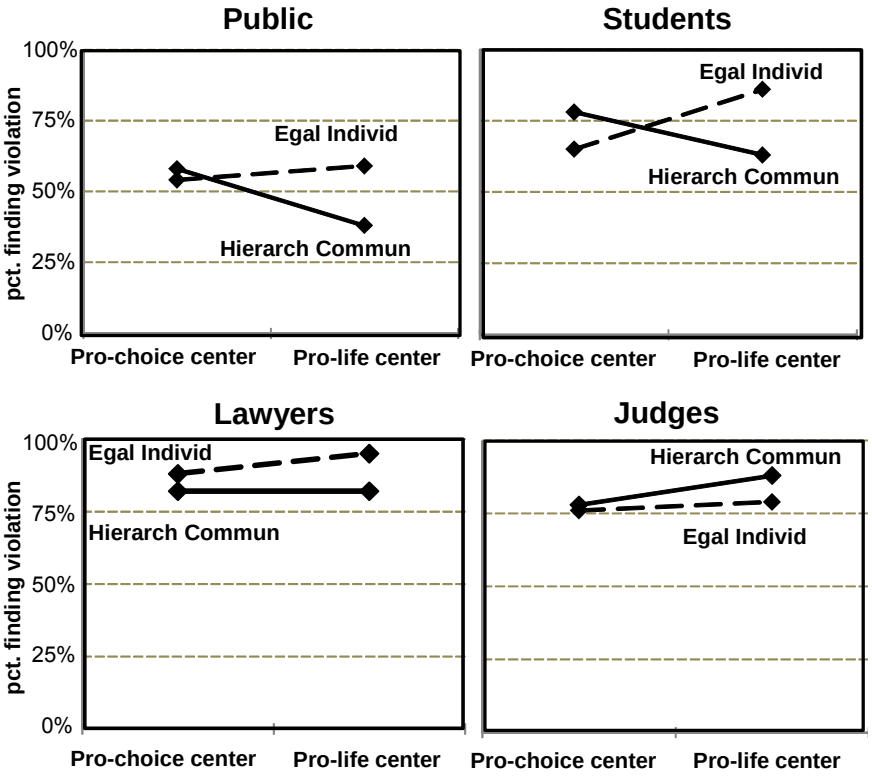
Cultural divisions were more modest but still apparent among members of the public in Disclosure (Figure 6). Egalitarian Individualist and Hierarchical Communitarian subjects favored finding a violation of the statute by narrow but roughly equal margins (52% to 48% and 53% to 47%, respectively) in the "pro-choice center" version. But in the "pro-life center" version, subjects with these identities diverged: whereas 60% of the Egalitarian Individualists concluded the officer had violated the statute by alerting the anti-abortion family-counseling center of its possible infiltration by a pro-choice activist, only 39% of Hierarchical Communitarian subjects did. While less dramatic than the effect in Littering, this disparity, too, fit

the study predictions on how identity-protective cognition would affect the disposition of individuals with these worldviews to find violations in the two versions of Disclosure.

There was no evidence of comparable effects in the responses of the judges. In Littering, Egalitarian Communitarian judges were slightly less likely, not more, to find the defendants had violated the statute in the "immigrant aid" version than were Hierarchical Individualist judges. In addition, the proportion of Egalitarian Communitarian judges who supported finding a violation did not increase but rather decreased slightly in the "construction worker" version (Figure 5). The proportion of Hierarchical Individualist judges finding a violation in the "construction worker" version also decreased by a small amount—but judges with that cultural worldview remained more likely to find the construction workers liable than did Egalitarian Communitarian judges. None of these differences, all of which were small, displayed the relationship between worldviews and outcome judgments suggestive of identity-protective cognition.

The responses of the lawyer members of the study sample were also not suggestive of identity-protective cognition. In Littering, Hierarchical Individualist lawyers were modestly more likely to find a violation in both versions ("construction worker": 33%; "immigrant aid": 40%) than were Egalitarian Communitarian lawyers ("construction worker": 25%; "immigrant aid": 33%). The latter, moreover, were slightly less likely, not more, to find a violation in the "immigrant aid" version than they were in the "construction worker" version. In Disclosure, a higher proportion of Egalitarian Individualist lawyers (95%) than Hierarchical Communitarian ones (82%) supported finding the defendant officer violated the statute when he exposed the pro-choice activist's effort to obtain a position at the religious, pro-life family planning center. But the proportion of Egalitarian Individualist lawyers who supported finding a violation (88%) was also higher than the proportion of Hierarchical Communitarian ones who did (83%) in the "pro-choice center" version, where the police officer had tipped off the pro-choice family planning center that a job applicant had concealed his identity as a pro-life activist. In both versions, moreover, lawyers overwhelmingly construed the statute as dispensing with the need to prove the officer "knew" his conduct was illegal.

Figure 6: Outcomes by Subject Type and Cultural Worldview in *Disclosure*



Note: Panels reflect the percentage of subjects of type and worldview who indicated support for finding a violation in one or another version of the Disclosure problem.

Among the students, in contrast, cultural divisions were again evident. Cultural dissensus was most pronounced in Disclosure (Figure 6). Eighty-six percent of Egalitarian Individualist students, but only 63% of Hierarchical Communitarian ones, favored finding the police officer violated the statute in the "pro-life center" version. But in "pro-choice"—the version in which the officer tipped off the pro-choice family counseling center of possible infiltration by a pro-life activist—78% of Hierarchical Communitarians, and only 65% of Egalitarian Individualists, supported finding a violation. This inversion reflects the pattern associated with identity-protective cognition.

In Littering, comparable proportions of Egalitarian Communitarian students (68%) and Hierarchical Individualist ones (64%) favored finding no violation of the statute in the "construction worker" version. But in the

"immigrant aid" version, a 20% gap emerged between Hierarchal Individualist students, 63% of whom favored finding a violation, and Egalitarian Communitarian ones, only 43% of whom supported that outcome (Figure 5). This pattern was also consistent with the predicted impact of the experimental manipulation on individuals with the specified cultural outlooks.

2. Multivariate Regression

a. *Generally*

The impact of subject type, worldview, and experimental assignment was probed more systematically with multivariate logistical regression analysis. For each problem, a regression model was constructed to enable statistical estimation of the probability that different subject types (member of the public, law student, lawyer, or judge) would find a violation conditional on the subject's worldview and the version of the problem.[145]

Monte Carlo simulations based on the regression models were performed to facilitate interpretation of the results. In a Monte Carlo simulation, the regression model outcome variable is calculated and randomly adjusted by an amount reflecting the measurement error associated with the model parameters. This process is repeated a sufficient number of times to populate the entire probability distribution for the outcome variable at specified values of the model predictors.[146] Using this technique, the probability that a decisionmaker would find a violation was computed a thousand times for each combination of subject type, cultural worldview, and experimental assignment of interest (Appendix A, Figure A1, Figure A2).[147] Differences in the predicted probabilities of finding a violation conditional on worldview or experimental assignment were determined in the same fashion.[148]

b. *Judges versus Members of the Public Using Frequentist Methods*

Figure 7 reports simulated estimates of the size of the interaction between subject worldviews and the experimental assignment for a member of the

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145 The regression analyses for the legal problems appear in Tables A1 and A2 in Appendix A.

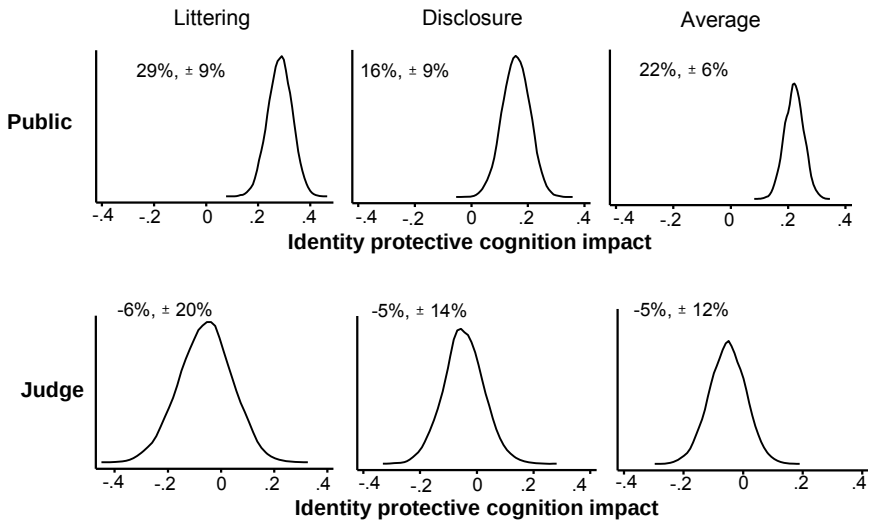
146 *See* ANDREW GELMAN & JENNIFER HILL, DATA ANALYSIS USING REGRESSION AND MULTILEVEL/HIERARCHICAL MODELS 137-51 (2007).

147 The continuous "hierarchy–egalitarianism" and "individualism–communitarianism" predictors were set at +1 SD; +1 SD for "Hierarchical Individualist"; +1, -1 for "Hierarchical Communitarian"; -1, +1 for "Egalitarian Individualist"; and -1, -1 for "Egalitarian Communitarian."

148 *See* Gary King, Michael Tomz, & Jason Wittenberg, *Making the Most of Statistical Analyses: Improving Interpretation and Presentation*, 44 AM. J. POL. SCI. 347, 349-353 (2000).

public and for a judge, respectively. There are separate estimates for each problem and for the "average effect" based on responses to both problems.[149]

Figure 7: Judges vs. Public: Estimated Impact of Identity Protective Cognition



Note: The figure is derived from Monte Carlo simulations based on Regression Model 3, Table A1, and Model 3, Table A2, both of which appear in Appendix A. The curves reflect the density distributions for the predicted difference in the probability that a decisionmaker with a particular worldview (either "Hierarchical Individualist" or "Egalitarian Communitarian" in Littering or "Hierarchical Communitarian" or "Egalitarian Individualist" in Disclosure) will find a violation if experimentally assigned to one version of the problem versus the other. A positive value for the difference indicates a differential consistent with the influence of identity-protective cognition.

Based on the multivariate regression models, the density distributions reflect the predicted *difference* in the probability that a decisionmaker with a particular worldview ("Hierarchical Individualist" or "Egalitarian Communitarian" in Littering, or "Hierarchical Communitarian" or "Egalitarian Individualist" in Disclosure) will find a violation in one version of the problem versus the other. Equivalently, the curves reflect estimates of how much more likely on average a decisionmaker with a particular worldview is to interpret the statute differently when finding a violation

149 The "average" effect was derived consistently with the methods prescribed in Robert Rosenthal & Donald B. Rubin, *Meta-Analytic Procedures for Combining Studies with Multiple Effect Sizes*, 99 PSYCHOL. BULL. 400 (1986), for aggregating the effect sizes of multiple single-study measures of a single phenomenon of interest—here the disposition of different subject types to display identity-protective cognition.

affirms rather than denigrates his or her cultural commitments. We thus characterize the model outputs as indicating the predicted "identity-protective cognition impact" (IPCI) of the experimental manipulations.[150]

The most likely IPCI for any subject type is the mean value in the distribution for that subject type. The probability that the "true" IPCI is larger or smaller than that becomes progressively less likely, consistent with the bell shape of the probability density distribution. Ninety-five percent confidence intervals (or ones of any other size) for the "true impact" can be determined by identifying the predicted values that bound the relevant interval in the range of simulated probabilities.[151]

The results confirm that the experimental manipulations generated the predicted identity-protective cognition effects in members of the public. Based on the regression model for Littering, for example, the predicted "identity-protective cognition impact" or IPCI for a member of the public is 29%. That is the best estimate, in other words, of how much being assigned to the "immigrant aid" version of the problem as opposed to the "construction worker" version changes the probability that either a "Hierarchical Individualist" or an "Egalitarian Communitarian" member of the public will find a violation. The 0.95 level of confidence for that estimate is ± 9%.[152] In Disclosure, the IPCI—the difference in the probability that either an "Egalitarian Individualist" or "Hierarchical Communitarian" member of the public will find a violation if assigned to the "pro-choice center" as opposed to "pro-life center" version—is 16% (± 9%). The average IPCI for a member of the public is 22% (± 6%) (Figure 7).[153]

The regression model corroborates the inference that judges were not affected by identity-protective cognition. As is clear from the judge IPCI probability distributions (Figure 7), the predicted IPCI for judges was not

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150 For this purpose, we are treating as an "identity-protective cognition effect" a difference in probability of finding a violation in the direction corresponding to the hypothesized effect of the experimental manipulation. In Figure 7, differences in that direction have a positive value; differences in direction contrary to the hypothesized effect of identity-protective cognition, in contrast, have a negative value.

151 *See* Lee Epstein, Andrew D. Martin, & Matthew M. Schneider, *On the Effective Communication of the Results of Empirical Studies, Part I*, 59 VAND. L. REV. 1811, 1832-33 (2006); King, Tomz & Wittenberg, *supra* note 148.

152 All confidence intervals reported in the text hereafter will reflect a 0.95 level of confidence.

153 Because each study problem constituted an indirect measure of an unobserved or latent disposition—the propensity to process information in a manner that reflects identity-protective cognition—the aggregated or "average" effect is more precise than either individual measure, and thus has a smaller standard error. *See* Rosenthal & Rubin, *supra* note 149.

different, statistically or practically, from zero in either Littering or Disclosure.[154]

Moreover, the difference between the public and judge IPCIs in both problems was large and significant, statistically and practically, in both Littering (34%, ± 22%) and Disclosure (20%, ± 17%). The predicted average public IPCI exceeds the predicted judge IPCI by 27% (± 14%). The "null hypothesis"—that there is no difference in the vulnerability of judges and members of the public to identity-protective reasoning—can thus be "rejected."

c. *Judges versus Members of the Public Using Bayesian Methods*

As an alternative to assessing the improbability of the "null hypothesis," one can use Bayesian methods to assess the strength of the evidence in relation to competing hypothesized IPCIs.[155] Under Bayes' theorem the likelihood ratio reflects how much more consistent an observed outcome is with one hypothesis than a rival one. It is the factor in proportion to which one should adjust one's assessment of the relative probability (expressed in odds) of one hypothesis in relation to the other.[156]

Imagine, for example, that we are shown two opaque canvas bags, labeled "B_1"and "B_2," each of which is filled with marbles (we use canvas bags for this example in anticipation of the reasonable concern that Bayes' theorem might apply only to marble-filled urns). We are not told which is which, but one bag, it is stipulated, contains 75% red marbles and 25% blue, and the other 75% blue and 25% red. We are instructed to "sample" the contents of the bags by drawing one marble from each, after which we should make our best estimate of the probability that B_1 is the bag containing mostly blue marbles and B_2 the one containing mostly red. We extract a blue marble from B_1 and a red one from B_2.

Bayes' Theorem furnishes logical instructions on how to use this "new evidence" to revise our estimates of the probability of the hypothesis that B_1 is the bag containing mostly blue marbles (and hence B_2 mostly red). If we assume that that hypothesis is true, then the probability that we would have drawn a blue marble from B_1 is 3/4 or 0.75, as is the probability that we would

154 The negative values suggest that the "best estimate" of the effects of the judges' cultural outlooks on their decision making were in fact the opposite from what one would expect if judges had been influenced by identity-protective cognition.

155 *See generally* Rivka M. de Vries & Richard D. Morey, *Bayesian Hypothesis Testing for Single-Subject Designs*, 18 PSYCHOL. METHODS 165 (2013); Goodman, *supra* note 140; John K. Kruschke, *Bayesian Estimation Supersedes the* t *Test*, 142 J. EXPERIMENTAL PSYCHOL. 573 (2013).

156 *See, e.g.*, Lempert, *supra* note 141.

have drawn a red marble from B_2. The joint probability of these independent events—that is, the probability of the two occurring together, as they did—is 3/4 x 3/4 or 9/16. If we assume that the hypothesis "B_1 is the one that contains mostly blue marbles" is false, then the joint probability of drawing a blue marble from B_1 followed by a red marble from B_2 would be 1/4 x 1/4, or 1/16. Other possible combinations of colors could have occurred, of course (indeed, there are four possible combinations for such a trial). But if we were to repeat this "experiment" over and over (with the marbles being replaced and the labels on the bags being randomly reassigned after each trial), then we would expect the sequence "blue, red" to occur nine times more often when the bag containing mostly blue marbles is the one labeled "B_1" than when it is the bag labeled "B_2." Because "blue, red" is the outcome we observed in our trial, we should revise our estimate of the probability of the hypothesis "B_1 contains mostly blue marbles" by a factor 9—from odds of 1:1 (50%) to 9:1 (90%).

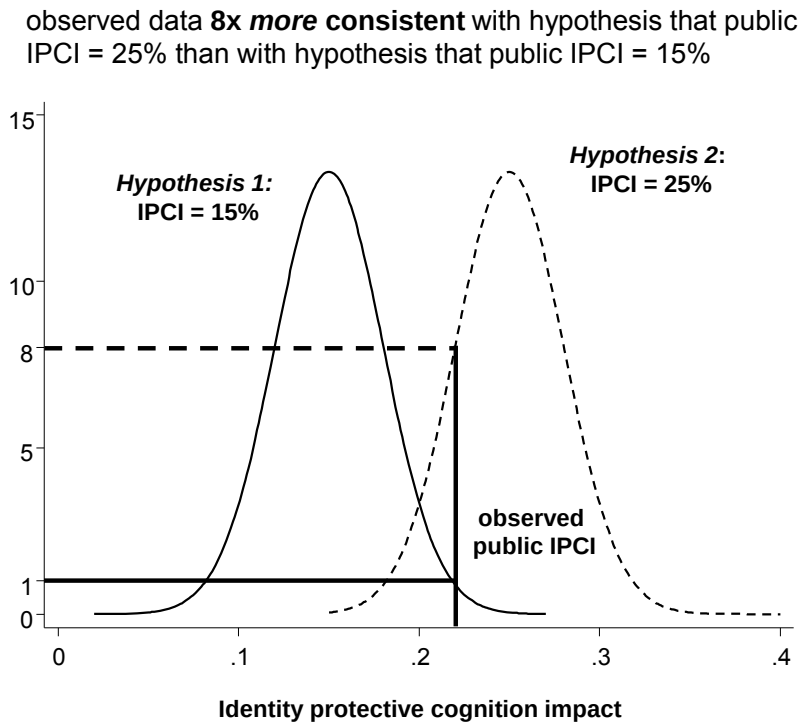
We can use precisely the same logic to assess the relative probability of hypothesized judge and public IPCIs. In effect, one can imagine each subject type as an opaque vessel containing some propensity to engage in identity-protective cognition. Although the strengths of those propensities—the subject types' "true" IPCIs—are not amenable to direct inspection, we can sample observable manifestations of them by performing this study's statutory interpretation experiment. Calculating the relative likelihood of the observed results under competing hypotheses, we can construct a likelihood ratio that conveys how much more consistent the evidence is with one hypothesized subject type IPCI than with another.

Figure 8 illustrates the use of this method to test two competing hypotheses about the public's "true" IPCI: that members of the public would be 25% more likely to find a violation when doing so is culturally affirming, and alternatively that they would be only 15% more likely to do so. To make the rival hypothesis commensurable with the study results, we can represent each as a probability distribution with the predicted IPCI as its mean and a standard error equivalent to the one observed in the experimental results. Within any one such distribution, the relative probability of alternative IPCIs (e.g., 15% and 25%) can be determined by assessing their relative "heights" on that particular curve.[157] Likewise, the relative probability of observing any particular IPCI under alternative distributions can be

[157] The units that appear on the *y*-axis are in fact completely irrelevant for this purpose. Consistent with convention, we compare probability densities, which are the first derivative of (rate of change in) cumulative probability distribution associated with the logistic regression function that generates the underlying probabilities.

determined by comparing the ratio of the heights for the probability density distributions in question.[158]

Figure 8: Assessing the Weight of the Evidence: Competing Hypotheses for Public IPCI



Note: The weight of the evidence in relation to two hypotheses can be determined by deriving a likelihood ratio from the probability density distributions associated with those hypotheses. Here, probability distributions reflecting the indicated hypotheses were constructed using the standard error (0.03) associated with the observed Public IPCI in the experiment. The probability of obtaining the observed experimental result is eight times greater under hypothesis 1 than hypothesis 2.

The public IPCI was 22%. The probability of observing such a result (or any in close proximity to it) is *eight times more likely* under the more extreme "public IPCI = 25%" hypothesis than it is under the more modest "public IPCI = 15%" hypothesis (Figure 8).[159] This is the Bayesian likelihood ratio, or the factor in proportion to which one should modify one's assessment of the relative probability that the "true" public IPCI is 25% as opposed to 15%.

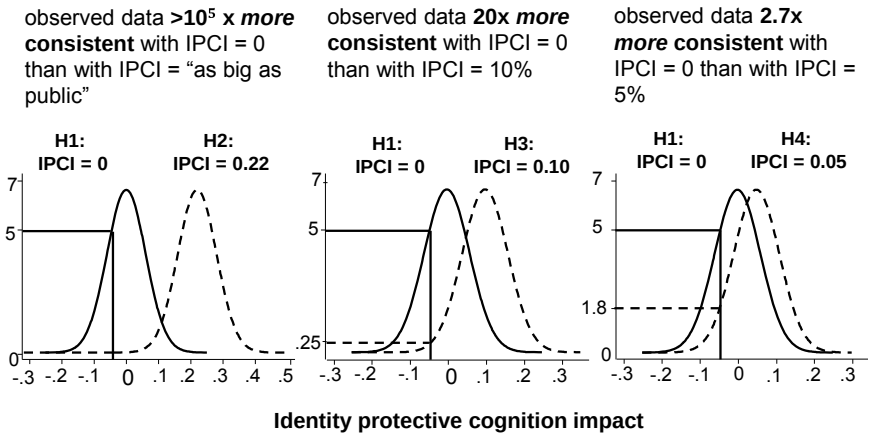
158 *See* Steven N. Goodman, *Toward Evidence-Based Medical Statistics. 2: The Bayes Factor*, 130 ANNALS INTERNAL MED. 1005 (1999).

159 *See generally* Goodman, *supra* note 140.

We will use the same process to assess the weight of four competing hypotheses about the vulnerability of judges to identity protective cognition. The first is that judges will be "unaffected" (IPCI = 0). This prediction, of course, appears similar to the "null hypothesis." But whereas "null hypothesis testing" purports to specify only whether the null hypothesis can be rejected, Bayesian methods can be used to obtain a genuine assessment of the strength of the evidence in support of there being "no effect" if that is a genuine hypothesis of interest, as it is here.[160] The remaining three hypotheses, the plausibility of which will be tested relative to the "IPCI = 0" hypothesis are that judges will be "just as affected as the public" (IPCI = 22%); that judges will be moderately affected (IPCI = 10%); and that judges will be affected to only a comparatively mild degree (IPCI = 5%).[161]

The results are reflected in Figure 9. Not surprisingly, the experimental data are much more supportive of the first hypothesis—that judges would be unaffected by the experimental manipulation—than with the second—that they would be "as affected as much as the public." Indeed, because the probability that we would have observed the actual experimental result if the latter hypothesis is true is astronomically low, there is little practical value in assigning a likelihood ratio to how much more strongly the evidence supports the hypothesis that judges were "unaffected" by the experimental manipulation.

Figure 9: Judge IPCI: Evidentiary Weight of Experimental Data



160 *See* Kruschke, *supra* note 155, at 577; Richard D. Morey & Jeffrey N. Rouder, *Bayes Factor Approaches for Testing Interval Null Hypotheses*, 16 PSYCHOL. METHODS 406 (2011).

161 *See generally* Goodman, *supra* note 158.

Note: The probability distributions reflecting the indicated hypotheses were constructed using the standard error (0.06) associated with the observed Judge IPCI in the experiment. The horizontal line intersecting the probability distributions is the observed judge IPCI (-5%).

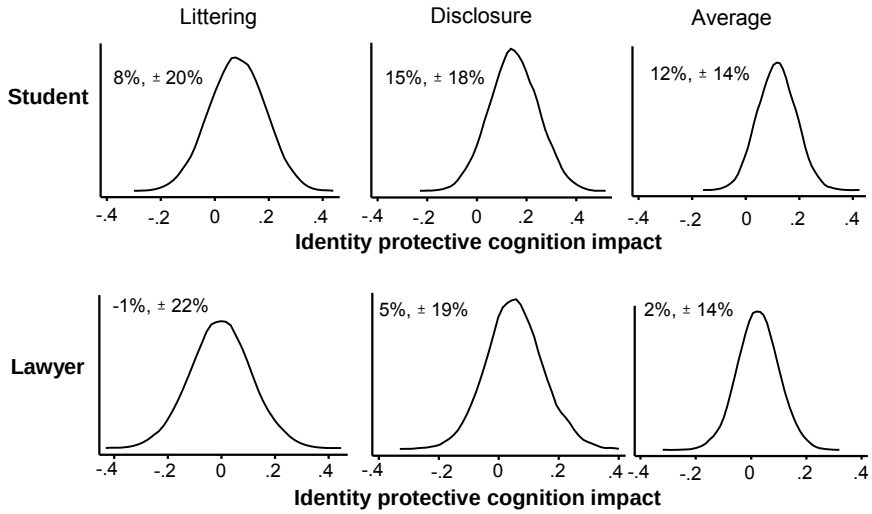
Of course, members of the public were influenced by their cultural predispositions to a strikingly large extent. To learn that the evidence strongly disfavors the inference that judges are *that* biased does not in itself give us much insight into whether judges possess the capacity for impartial decisionmaking that their duties demand. It was precisely for that reason that less extreme IPCIs were also hypothesized.

Even those predictions, however, proved to be less supported by the evidence than was the hypothesis that judges would be unaffected by identity-protective reasoning. The evidence was *twenty times* more consistent with the "judge IPCI = 0" hypothesis than the "judge IPCI = 10%" hypothesis. The weight of the evidence was not as decided but still favored—by a factor of about three—the "judge IPCI = 0" hypothesis over the "judge IPCI = 5%" hypothesis (Figure 9).

d. *Lawyers and Law Students, Both Methods*

The simulated probability distributions for lawyers and law students are graphically represented in Figure 10. The average lawyer IPCI was neither practically nor meaningfully different from zero (2%, ± 14%). In addition, the difference between the lawyer and public IPCIs was 20% (± 16%). One can thus "reject" the "null hypothesis" that the difference in the magnitude of the lawyer and public responses to the experimental manipulation was zero.

Figure 10: Lawyers & Law Students: Estimated IPCI

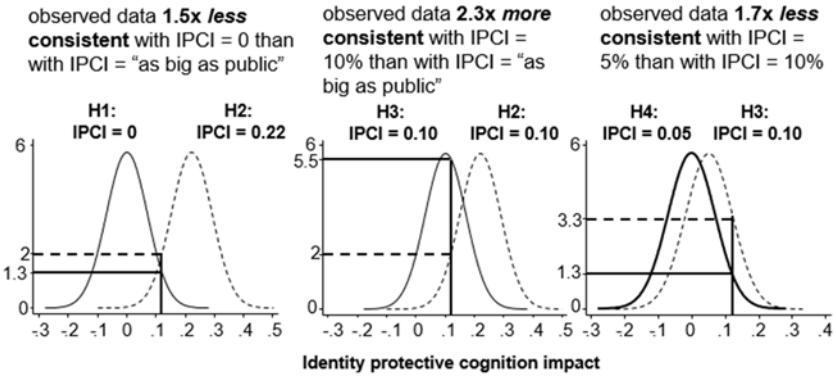


Note: Derived from Monte Carlo simulation based on regression model 3 in Table A1 and regression model 3, Table A2 in Appendix A. Density distributions reflect the predicted *difference* in the probability that a decisionmaker with a particular worldview (either "Hierarchical Individualist" or "Egalitarian Communitarian" in Littering or "Hierarchical Communitarian" or "Egalitarian Individualist" in Disclosure) will find a violation if experimentally assigned to one version of the problem versus the other.[162] A positive value for the difference indicates a differential consistent with the influence of identity-protective cognition.

The evidence for the students is more equivocal. In both problems, the predicted student IPCI was greater than zero, and on average it was 12% (± 14%). This effect—the difference in how likely a student decisionmaker is to find a violation when that outcome is identity-affirming rather than identity-denigrating—is not statistically significant at "$p < 0.05$"; it is significant at only "$p = 0.10$." But the difference between the student and public IPCI's was not statistically significant at $p < 0.05$ either (10%, ± 15%; $p = 0.20$). Accordingly, if one uses "null hypothesis testing" criteria, one can reject *neither* the hypothesis that students were *unaffected* by identity-protective cognition *nor* the hypothesis that they were affected just as much as members of the public—who by this same mode of assessment can be deemed to have been strongly influenced by this same form of bias (22%, ± 6%).

162 *See generally* King, Tomz, & Wittenberg, *supra* note 148.

Figure 11: Student IPCI: Evidentiary Weight of Experimental Data



Note: The probability distributions reflecting the indicated hypotheses were constructed using the standard error (0.07) associated with the observed student IPCI in the experiment. The horizontal line intersecting the probability distributions is the observed student IPCI (12%).

More information can be extracted from the results, however, if one computes the likelihood ratios for competing hypotheses about the size of the "true" student IPCI. Figure 11 indicates that the experimental evidence is very slightly—1.5 times—more consistent with the hypothesis that the "true" student IPCI is "as large as" the public IPCI that with the "student IPCI = 0" hypothesis. However, the evidence is even more supportive of the "student IPCI = 10%" hypothesis, which is over two times more consistent with the evidence than is the "as big as the public" hypothesis. The "student IPCI = 10%" hypothesis is also nearly twice as consistent with the evidence than is the "student IPCI = 5%" hypothesis.

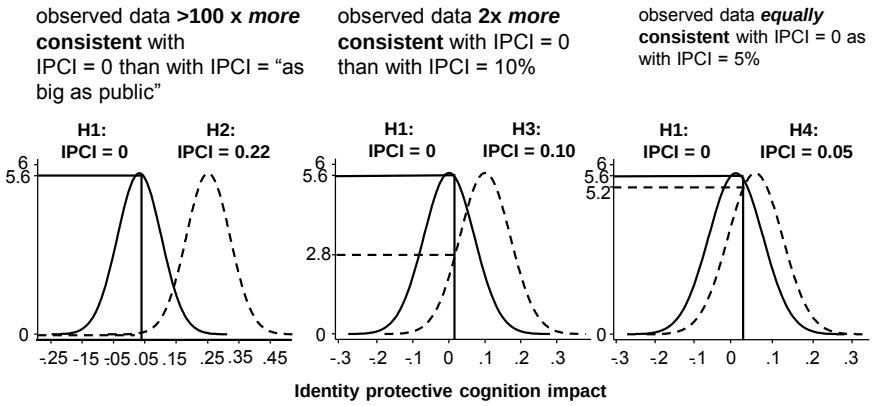
Again, the use of "null hypothesis testing" methods supported no particular inference about the impact of identity-protective cognition on student subjects. But using Bayesian methods to assess the weight of the evidence in relation to these competing hypotheses suggests the most supported one is that the students would be affected about half as much by the experimental manipulation as were members of the public.

Figure 12 illustrates the use of this method to test competing hypotheses about the lawyer IPCI. The weight of the evidence against the hypothesis that lawyers will be affected as much as the public is quite strong: the "lawyer IPCI = 0" hypothesis is over 100 times more consistent with the evidence. The evidence also more strongly supports—by a factor of just over two—the "lawyer IPCI = 0" hypothesis over the "lawyer IPCI = 10%" hypothesis.

On the final hypothesis—that lawyers would be 5% more likely to find a violation when such an outcome was culturally affirming rather than culturally denigrating—the evidence is effectively silent. Generating a likelihood ratio of

very close to one, the experimental results are effectively equally consistent with the "lawyer IPCI = 0" and "lawyer IPCI = 5%" hypotheses.

Figure 12: Lawyer IPCI: Evidentiary Weight of Experimental Data



Note: The probability distributions reflecting the indicated hypotheses were constructed using the standard error (0.07) associated with the observed lawyer IPCI in the experiment. The horizontal line intersecting the probability distributions is the observed lawyer IPCI (2%).

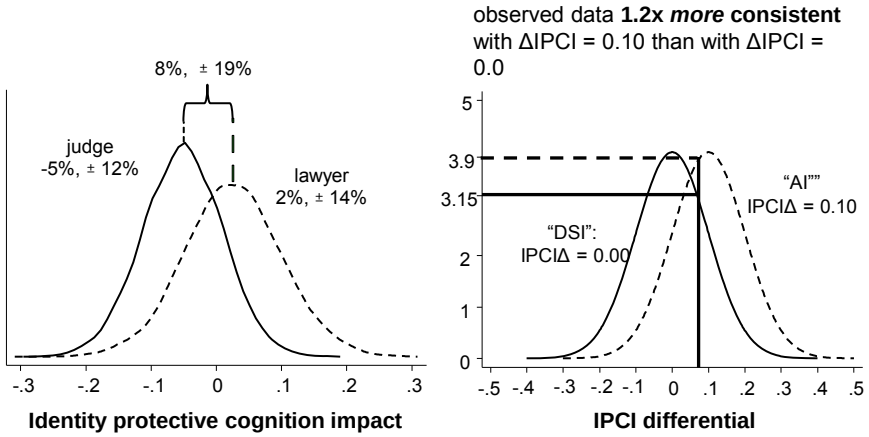
e. *Judges versus Lawyers*

Comparing Figures 9 and 12 reveals that the evidence supports the "unaffected" hypothesis relative to each of its rivals more strongly in the case of judges than in the case of lawyers. But it would be a mistake to infer on that basis that the evidence supports by a comparable margin the hypothesis that judges are more likely than lawyers to be unaffected by identity-protective cognition by a substantial degree.

Neither the judge IPCI (-5%, ± 12%) nor the lawyer IPCI (2%, ± 14%) is statistically or practically different from zero. If we model each rival to the "no effect" hypotheses as a mean or "most likely" value atop a bell-shaped probability density distribution, then the probability of observing the judge IPCI will be even more dramatically improbable than observing the lawyer IPCI within any of the relevant distributions.

But the gap between the judge and lawyer IPCIs is itself relatively modest—8% (± 19%), a difference that also fails to satisfy the conventional "null hypothesis" level of statistical significance. Accordingly, the probability of observing *both* values when the hypothesized difference is relatively small should be greater than the probability of observing both when the hypothesized difference is relatively large.

Figure 13: Judge–Lawyer IPCI Differential



Note: The left-hand panel juxtaposes probability density distributions for predicted lawyer and judge IPCIs (*see supra* Figures 7 & 10). The probability distributions reflecting the indicated hypotheses were constructed using the standard error (0.10) associated with the observed difference in judge and lawyer IPCIs.

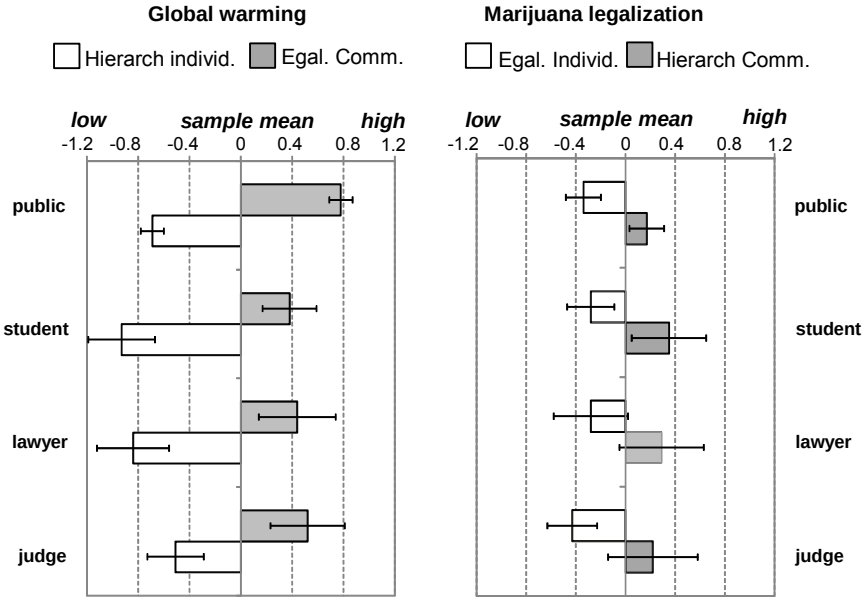
This point is illustrated in Figure 13, which juxtaposes the probability distributions for two competing hypotheses about the size of the difference between the judge and lawyer IPCIs: 0% vs. 10%. The meager 1.2 likelihood ratio in favor of the latter hypothesis signifies that the evidence in support of it is only trivially greater than the evidence in support of the former "equal IPCI" hypothesis.

B. *Risk Perceptions*

As indicated, the subjects responded to a battery of items measuring their perceptions of various societal risks. These were combined to form separate "environmental risk" and "social deviancy risk" scales.[163]

163 *See supra* Part III.

Figure 14: Societal Risk Concerns



Note: The bars reflect standardized (z-score) means of indicated risk perceptions for subjects holding indicated worldviews (as determined by relationship of their scores to means on the Hierarchy–Egalitarianism and Individualism–Communitarianism scales). Error bars reflect 0.95 level of confidence for "true mean."

Subject responses displayed the characteristic forms of variance associated with identity-protective cognition. Thus, subjects became less concerned with environmental risks, such as global warming and nuclear power, as they became more hierarchical and individualistic and more concerned with them as they became more egalitarian and communitarian ($\Delta M = 1.34$, t-statistic = 20.05, $p < 0.01$). Greater concern with social deviancy risks, such as legalization of marijuana and teen pregnancy, was associated with being more hierarchical and communitarian, whereas being more egalitarian and individualistic predicted less concern ($\Delta M = 0.33$, t-statistic = 6.76, $p < 0.01$). These constellations of risk perceptions are consistent with reliance on cultural cognition, a form of motivated reasoning that consists of selectively crediting and discrediting information about societal risks in patterns that protect one's standing in a cultural group for which membership is associated with the risk perceptions in question.[164]

164 *See generally* Kahan & Braman, *supra* note 111; Wildavsky & Dake, *supra* note 125.

The same patterns of risk perceptions were readily observable in the judge, lawyer, and law student members of the sample (Figure 14). Multivariate testing corroborated that all subject types were culturally polarized to a substantial degree (Table A3). The size of the differences varied but not in patterns consistent with the inference that either legal practice or the experience of being a judge confers meaningful resistance to identity-protective reasoning for judgments unrelated to legal decisionmaking (Appendix A, Figure A3).[165]

V. TAKING STOCK

A. *So Are Judges Political?*

The aim of this study was to test whether legal reasoning on the part of judges displays the characteristics of identity-protective cognition. Because that dynamic predictably generates culturally or ideologically biased information processing, evidence that judges are vulnerable to identity-protective reasoning would support the popular and scholarly indictment that judges—lower court ones and Supreme Court Justices alike—are mere "politicians in robes."

More concretely, the nature of the sample and the design of the study were self-consciously constructed to enable testing of four distinct hypotheses. The first was Universal Vulnerability or UV, which predicted that judges, lawyers, and law students would display the same vulnerability to identity-protective reasoning as members of the public. UV is the hypothesis associated with dominant scholarly accounts, both observational and experimental, of the impact of ideology on judicial decisionmaking.

The results of the study were strongly at odds with UV. Both statutory interpretation problems excited strong evidence of identity-protective cognition—the form of biased information processing associated with political polarization—in members of the general public, *but not* in lawyers or judges. Neither judges nor lawyers displayed practically or statistically meaningful signs of being influenced by the cultural congeniality of the experimentally manipulated case outcomes.

The second hypothesis was Identity-Protective Cognition Immunity (ICI): that legal training would imbue lawyers and judges with resistance to identity-protective cognition generally by virtue of its effect in strengthening critical reasoning abilities. This hypothesis, the vindication of which would have been contrary to existing research that suggests identity-protective

165 *See infra* Appendix A.

cognition is in fact amplified by critical reasoning proficiency,[166] was also not supported by the study. The societal risk perceptions of lawyers and judges (and law students, too) displayed the relationship to their cultural worldviews that is the signature of identity-protective reasoning on contested matters of public policy.

The third hypothesis—Domain-Specific Immunity (DSI)—predicted exactly this pattern. The basis for *DSI* was the expectation that professional training and experience could be expected to instill in lawyers and judges habits of mind resistant to identity-protective cognition when performing the types of reasoning tasks characteristic of their profession—but not otherwise. Consistent with this hypothesis, judges and lawyers who were as divided as members of the public generally on risk issues like climate change and marijuana legalization displayed remarkably high degrees of convergence in their analysis of legal problems that provoked cultural polarization in members of the public. [167]

The final hypothesis—Acquired Neutrality (AN)—predicted that judges alone would display resistance to identity-protective reasoning. The basis for this hypothesis was the surmise that the experience of willfully engaging in neutral decisionmaking would endow judges with a distinctive ability to stifle unconscious motivations to conform their assessments of information to their defining group commitments.

The weight of the evidence in support of rejecting various hypothesized degrees of vulnerability to identity-protective cognition was in fact consistently stronger in the case of the judges than the lawyers. But the evidence was amply strong in the lawyers' case. It would seem odd, then, to conclude that the demonstrated neutrality of the judges in this study is attributable to the habitual exercise of their special duties rather than to the habits of mind associated with legal training and experience generally.

The strength of the evidence for DSI in this study is strongly at odds with previous studies purporting to find that judges resort to "ideological considerations" when deciding cases. The conflict is most likely attributable to the methodological limitations present in the latter studies but self-consciously corrected in this one. Observational studies, it has been pointed out, exaggerate the role of such influences by use of both biased samples—

166 *See supra* notes 77–79 and accompanying text.

167 This result is very much in keeping with the ones reported in Wistrich, Rachlinski & Guthrie, *supra* note 60. The "emotional" sensibilities that they view as "motivating" judges to reach different outcomes in cases involving "sympathetic" and "unsympathetic" parties can be understood as evincing a *shared professional sensibility* that guided *ideologically diverse* judges to converge on outcomes perfectly consistent with the governing legal provisions. *See supra* notes 63–67 and accompanying text.

litigated cases, which consist disproportionately of ones likely to divide jurists inclined to agree notwithstanding ideological differences—and biased measures—outcome classifications that treat as "ideological" disagreements based on jurisprudential considerations intrinsic to the law itself.[168] This study avoided these problems by use of an experimental design that manipulated the subjects' motivations to decide a problem on the basis of cultural commitments extrinsic to the relevant legal rule. The experiment, moreover, was performed on actual judges. The finding that judges are not influenced by identity-protective cognition when ordinary members of the public (including law students) are underscores the mistake of treating the reasoning of the latter as a valid model of the reasoning of the former.

While inconsistent with scholarship suggesting that judicial decisionmaking is "ideological," the study results complement and extend other work showing that judges can be expected to display at least some measure of immunity to cognitive biases thought to interfere with the performance of their jobs.[169] Because that scholarship has focused on biases characteristic of over-reliance on heuristic System 1 information processing, it has not furnished grounds one way or the other for believing that judges would be immune to identity-protective cognition, which research has shown is magnified, not mitigated, by proficiency in the forms of conscious, effortful System 2 information processing.[170] Accordingly, the present study adds to the growing stock of valid empirical examinations of "how judges think."[171]

B. *What About Law Students?*

For the law student participants in our study, the results were mixed. Overall, the evidence supports the conclusion that students were affected less by the experimental manipulation than were members of the public. Nevertheless, the evidence also suggests that it is likely students were affected enough to raise doubts about their capacity to decide cases in a manner uninfluenced by cultural commitments extrinsic to law: the evidence was more consistent than not with the inference that the students were at least 10 percentage points more likely to find a violation when doing so suited rather than disappointed their cultural worldviews.

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168 Remarkably, some "ideology thesis" proponents use information on judges' voting behavior to characterize judges as "liberal" or "conservative" and then use the resulting measures to "test" hypotheses about "ideological voting" by those judges in the very cases from which their "ideology" classifications or scores were derived. *See* EPSTEIN, POSNER & LANDES, *supra* note 5, 113-16 & n.13.

169 *See, e.g.*, Guthrie, Rachlinski & Wistrich, *supra* note 75, at 27-28.

170 *See supra* notes 77–79 and accompanying text.

171 *See generally* Guthrie, Rachlinski & Wistrich, *supra* note 75.

That law students would not enjoy the same capacity to resist identity-protective reasoning as judges and lawyers is not surprising and is consistent with the Domain-Specific Immunity hypothesis. Students enjoy an immature form of the professional judgment that fully trained and experienced lawyers possess. It stands to reason, then, that culturally diverse students would display less convergence in their assessment of culturally fraught legal problems.

Indeed, our finding that students are less resistant to politically motivated reasoning than are judges and lawyers corroborates one important component of the Redding–Reppucci study and helps to put the full results of that study in perspective. As we did, Redding and Reppucci found that students, but not judges, were inclined to conform legal rulings—in their study, the admissibility of evidence on the deterrent efficacy of the death penalty—to their political outlooks.[172]

Redding and Reppucci also found that both judges and students tended to resolve constitutional challenges to capital punishment in a manner consistent with their political values, regardless of whether the evidence challenged their prior views on capital punishment's deterrent efficacy.[173] But as we have explained,[174] that legal issue itself requires judges to make normative judgments. Normative judgments, unsurprisingly, will vary across judges of differing political outlooks. Insofar as the role of those judgments in legal decisionmaking is intrinsic to law, however, it is not valid to treat any correlation between legal rulings of that sort and decisionmakers' political outlooks as evidence of "politically" or "ideologically" biased reasoning.[175]

For it to be important—indeed, for it to be analytically coherent—the claim that judges are "politically biased" requires demonstrating the responsiveness of their rulings to political outlooks extrinsic to the legal issues they are considering.[176] The statutory interpretation rulings of the judges in our study were not responsive to such outlooks—just as the evidentiary rulings of the judges in the Redding–Reppucci study were not. That the legal reasoning of law students, in our study and theirs, were not immune to this bias furnishes reason to view both studies as evidence that professional judgment contributes to neutralizing identity-protective cognition on judicial decisionmaking.

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172 Redding & Reppucci, *supra* note 68, at 47-48.

173 *Id.* at 43-49.

174 *See supra* notes 30–35 & 72 and accompanying text.

175 *See* Edwards & Livermore, *supra* note 11, at 1945-48.

176 *See supra* notes 30–35 and accompanying text.

At the same time, we think it would be a mistake to treat as unimportant our finding that students displayed at least some degree of resistance to identity-protective cognition. Because they are likely to enjoy higher than average proficiency in critical reasoning, law students can in fact be expected to be *more vulnerable*, not less, to ideologically motivated reasoning.[177] Indeed, the risk-perception responses of the student members of our sample displayed ample evidence of being affected by this form of information processing generally. Yet on one problem that plainly did culturally polarize ordinary members of the public, the students in our study were more likely to converge on the answer that lawyers and judges recognize as correct.

The process of acquiring this species of professional judgment obviously does not end in law school. But our study suggests that it certainly begins there.

C. *Motivated Reasoning, Professional Judgment, and Political Conflict*

Using experimental methods, decision science has generated a rich empirical literature on professional judgment. Areas of investigation have included the interplay of unconscious and reflective modes of cognition in expert reasoning;[178] the susceptibility and resistance of professionals to biases, in and out of domain;[179] and one or another determinant of judgmental proficiency.[180]

This study makes a contribution to this general body of literature as well. It is the first to examine whether and how professional judgment interacts with identity-protective reasoning.

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177 *See* Kahan, *supra* note 16, at 416-17.

178 *See, e.g.*, Bedard & Biggs, *supra* note 88 (studying hypothesis formation in accounting professionals); Marcum, *supra* note 89.

179 *See, e.g.*, Merim Bilalić, Robert Langner, Michael Erb & Wolfgang Grodd, *Mechanisms and Neural Basis of Object and Pattern Recognition: A Study with Chess Experts*, 139 J. EXPERIMENTAL PSYCHOL. 728 (2010); Jonathan J. Koehler, *The Influence of Prior Beliefs on Scientific Judgments of Evidence Quality*, 56 ORG. BEHAV. & HUM. DECISION PROCESSES 28 (1993) (describing the agreement effect of scientific judgments); Olga Kostopoulou, J. Edward Russo, Greg Keenan, Brendan C. Delaney, & Abdel Douiri, *Information Distortion in Physicians' Diagnostic Judgments*, 32 MED. DECISION MAKING 831 (2012); *cf.* Paul Slovic & John Monahan, *Probability, Danger, and Coercion: A Study of Risk Perception and Decision Making in Mental Health Law*, 19 L. & HUM. BEHAV. 49 (1995).

180 *See*, *e.g.*, PHILIP E. TETLOCK, EXPERT POLITICAL JUDGMENT: HOW GOOD IS IT? HOW CAN WE KNOW? (2005) (discussing means of measuring expertise in politics); Philip M. Fernbach, Adam Darlow & Steven A. Sloman, *Neglect of Alternative Causes in Predictive but Not Diagnostic Reasoning*, 21 PSYCHOL. SCI. 329, 334 (2010); Paul Slovic, John Monahan & Donald G. MacGregor, *Violence Risk Assessment and Risk Communication: The Effects of Using Actual Cases, Providing Instruction, and Employing Probability Versus Frequency Formats*, 24 LAW & HUM. BEHAV. 271 (2000).

It is not particularly surprising that this topic has not received scholarly attention. The impact of identity-protective reasoning is not nearly so significant for understanding and perfecting professional judgment as are the effects of the various other cognitive dynamics featured in the decision science literature. Recognizing that auditors, say, have a stake in forming perceptions of societal risk that protect their status in their cultural groups is unlikely to contribute much to assessing the role that prototypical reasoning plays in their detection of irregularities in financial records.[181] The prospect that doctors will misdiagnose a disease because of base-rate neglect or coherence-based reasoning, likewise, is more critical to assessing the proficiency of physicians than is figuring out if they are likely to be unconsciously motivated to selectively credit and dismiss data on climate change in a manner that reflects their worldviews. The relevance of identity-protective cognition to professional judgment is much more conspicuous in law, where assuring that facts are determined, and legal rules administered, in a manner that is neutral as between competing cultural understandings of the best way to live is the very form of expertise that a judge is required to exercise.

But there is at least one other group of experts whose vulnerability to identity-protective cognition has become an issue of speculation: scientists who investigate risks and related facts that excite cultural polarization. Sensibly, citizens tend to treat "scientific consensus" on environmental risk and other highly technical matters as a reliable normative guide for decisionmaking, collective and individual.[182] But what makes it sensible for them to do so is that the method of inquiry that scientists themselves use does *not* afford existing "scientific consensus" any particular weight. On the contrary, the entitlement of any previously supported proposition to continued assent is, for science, conditional on its permanent amenability to reexamination and revision in light of new evidence.[183]

If, then, there were reason to believe that scientists themselves were being unconsciously motivated to *discount* evidence challenging "consensus" positions on issues like climate change, say, or nuclear power or genetically modified foods, by their cultural outlooks, *that* would be a reason for treating

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181 *Cf.* Bedard & Biggs, *supra* note 88 (showing that hypothesis creation in auditor analysis is not related to an auditor's particular worldview).

182 *See generally* Dan M. Kahan, Hank Jenkins-Smith, & Donald Braman, *Cultural Cognition of Scientific Consensus*, 14 J. RISK RES. 147, 147 (2011) (noting that both sides in culturally polarizing debates over societal risks understand their group's position to be consistent with "scientific consensus"—but disagree about what "scientific consensus" *is* as a result of identity-protective cognition).

183 *See* KARL POPPER, THE LOGIC OF SCIENTIFIC DISCOVERY 40 (1959).

apparent scientific-consensus positions as a less reliable guide for decisionmaking. Various commentators, including some scientists, now assert that identity-protective reasoning has pervasively distorted the findings of climate scientists, making their conclusions, as reflected in reports like those issued by the Intergovernmental Panel on Climate Change,[184] the National Academy of Sciences,[185] and the Royal Society,[186] unreliable.[187]

Obviously, the best way to test this claim is by conducting valid empirical studies of the scientists whose findings on risk or other policy-relevant facts are being challenged on this basis. But we believe our study, although confined to judges and lawyers, furnishes at least some evidence for discounting the likelihood of the hypothesis that climate scientists or other comparable experts are being influenced by identity-protective reasoning. The reason is the connection between our study results and the theory of professional judgment on which the study was founded.

As explained,[188] the theoretical basis for our study design and hypotheses was the account of professional judgment most conspicuously associated with the work of Howard Margolis. Margolis treats professional judgment as consisting of the acquisition of specialized prototypes that enable those possessing the relevant form of expertise to converge on the recognition of phenomena of consequence to their special decisionmaking responsibilities.

Margolis used this account of professional judgment among scientists to help explain lay–expert conflicts over environmental risk. Nonexperts necessarily lack the expert prototypes that figure in expert pattern recognition. Nevertheless, members of the public possess other forms of prototypes—ones consisting of *what expert judgments look like*—that help them to recognize "who knows what about what." Their adroit use of these prototypes, through the cognitive process of pattern recognition, enables them to reliably converge on what experts know, and thus to get the benefit of it for their own decisionmaking, despite their inability to corroborate (or even genuinely comprehend) that knowledge for themselves. Nevertheless, in Margolis's scheme, the bridging function that these "expertise prototypes" play in connecting lay judgments to expert ones can be disrupted. Such

184 *See*, *e.g.*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS: WORKING GROUP I CONTRIBUTION TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (2013).

185 *See, e.g.*, NATIONAL RESEARCH COUNCIL, ECOLOGICAL IMPACTS OF CLIMATE CHANGE (2008).

186 *See, e.g.*, ROYAL SOCIETY, PREVENTING DANGEROUS CLIMATE CHANGE (2009).

187 *See, e.g.*, Judith Curry, *Scientists and Motivated Reasoning*, CLIMATE ETC. (Aug. 20, 2013), http://judithcurry.com/2013/08/20/scientists-and-motivated-reasoning [http://perma.cc/MMA7-KVKF].

188 *See supra* notes 88–99 and accompanying text.

sources of disruption create fissures between expert and lay judgment and resulting forms of public conflict over environmental risk.

Identity-protective cognition can be understood to be a disrupting influence of this character. When a fact subject to expert judgment (Is the earth heating up and are humans causing that? Does permitting citizens to carry handguns in public make crime rates go *up* or *down*? Does the HPV vaccine protect adolescent girls from a cancer-causing disease—or lull them into sexual promiscuity that increases their risk of pregnancy and other STDs?) becomes entangled in antagonistic cultural meanings, positions on that fact can become transformed into badges of membership in and loyalty to opposing groups. At that point the stake people have in protecting their status in their group will compete with, and likely overwhelm, the one they have in forming perceptions that align with expert judgments.[189]

As we have noted,[190] there is a striking affinity between the account Margolis gives of pattern recognition in expert judgment among scientists and other professionals and Karl Llewellyn's account of "situation sense" as a professionalized recognition capacity that enables lawyers and judges to converge on appropriate legal outcomes despite the indeterminacy of formal legal rules. We would surmise, based on this study and previous ones,[191] a parallel account of public conflict over judicial decisions.

Lacking lawyers' "situation sense," members of the public will not reliably be able to make sense of the application of legal rules. But members of the public will presumably have acquired lay prototypes that enable them, most of the time anyway, to recognize the validity of legal decisions despite their own inability to verify their correctness or comprehend their relationship to relevant sources of legal authority.

But just like their capacity to recognize the validity of scientific expert judgments, the public's capacity to recognize the validity of expert legal determinations will be vulnerable to conditions that excite identity-protective reasoning. When that happens, culturally diverse citizens will experience disagreement and conflict over legal determinations that *do not* generate such disagreement among legal decisionmakers.[192]

This was the basic theoretical account that informed our study. It was the basis for our prediction that judges, as experts possessing professional

189 *See* Dan Kahan, *Why We Are Poles Apart on Climate Change*, 488 NATURE 255 (2012).

190 *See supra* notes 88–99 and accompanying text.

191 *See generally* Kahan, Hoffman & Braman, *supra* note 46 (studying perceptions of a police chase, and finding that differences in cultural and social groups can have significant effects on individuals' perceptions); Kahan, Hoffman, Braman, Evans & Rachlinski, *supra* note 46 (showing evidence for cultural cognition affecting individual perceptions of the speech–conduct distinction).

192 *See generally* Kahan, *Neutral Principles, Motivated Cognition, supra* note 9.

judgment, would be largely immune to identity-protective cognition when making in-domain decisions. By accessing their stock of shared prototypes, judges and lawyers could be expected to reliably attend only to the legally pertinent aspects of controversies and disregard the impertinent ones that predictably generate identity-protective cognition in members of the public—and thus resist cultural polarization themselves in their expert determinations. That is exactly the result we found in this study.

Because this result was derived from and corroborates a more general account of the relationship between identity-protective reasoning and professional judgment, it seems reasonable to imagine that the same relationship between the two would be observed among other types of experts, including scientists studying climate change and other societal risks. On this account, public conflict over climate change and similar issues reflects a reasoning distortion peculiar to those who lack access to the prototypes or patterns that enable experts to *see* how particular problems should be solved. But since the experts *do* possess access to those prototypes, their reasoning, one would predict, is immune to the same form of disruption when they are making in-domain decisions. This is the basis for our conclusion that the current study furnishes reason for discounting the assertion that scientists and other risk-assessment experts should be distrusted because of their vulnerability to identity-protective cognition.

Discount does *not* mean dismiss, however. Any judgment anyone forms on the basis of this study would obviously be subject to revision on the basis of evidence of even stronger probative value—the strongest, again, being the results of a study of the relevant class of professionals. [193]

At a minimum, though, this study shows that existing studies of the impact of identity-protective cognition on *members of the public* have *no probative value* in assessing whether the in-domain judgments of climate scientists or other risk-assessment professionals are being distorted by this form of bias. Generalizing from studies of members of the public to these experts would reflect the same question-begging mistake as generalizing from such studies to judges. The results of this study help illustrate that those who relied on experiments involving general-public samples to infer that judges

193 *Cf.* Toby Bolsen, James N. Druckman & Fay Lomax Cook, *Citizens', Scientists', and Policy Advisors' Beliefs About Global Warming*, ANNALS AM. ACAD. POL. & SOCIAL SCI., March 2015, at 271 (reporting data suggesting that scientists are less culturally polarized than members of public on climate change); J. S. Carlton, Rebecca Perry-Hill, Matthew Huber & Linda S. Prokopy, *The Climate Change Consensus Extends Beyond Climate Scientists*, ENVTL. RES. LETTERS (Sept. 24, 2015), http://iopscience.iop.org/article/10.1088/1748-9326/10/9/ 094025/ pdf [http://perma.cc/L246-CBEE] (same).

are influenced by identity-protective cognition were making a mistake.[194] Those who rely on how members of the public reason to draw inferences about the in-domain judgments of scientists are making one, too.

Our study implies, though, that it probably isn't a mistake to study *lawyers* if one wants to learn more about how judges think. Obviously, identity-protective reasoning is only one cognitive dynamic of interest for those engaged in examining how general mechanisms of information processing interact with judicial habits of mind. It is arguably the one, though, that raises the most serious questions about the validity of using samples of lawyers to do so: lawyers and judges both engage in legal reasoning, but only judges have real-world experience making legal decisions that can threaten their own and others' cultural identities. Thus, our finding that the responses of judges and lawyers were highly convergent with one another's—and highly divergent with those of members of the public and even those of law students—furnishes grounds for confidence that studies of lawyers can validly be used to model how judges will perform in reasoning tasks that invoke the form of professional judgment they share.

D. *The "Neutrality Communication Problem"*

We have suggested that the results of this study are relevant to the issue of how identity-protective cognition might affect expert scientists. We now want to explain how the contribution that identity-protective cognition makes to conflicts over policy-relevant science can be used to highlight the practical significance of our study results for the administration of justice.

There is an obvious sense in which the results of this study can be understood as good news for the justice system. The perception that judges are "just politicians in robes" is, as we noted, commonplace. The popular view that judges decide cases on the basis of political or cultural commitments extrinsic to law is both understandable and distressing. Yet in an experiment designed to avoid methodological limitations associated with studies that have purported to corroborate this anxiety, we found evidence that judges of diverse cultural outlooks can be expected to converge on results in cases that

194 *See supra* Section I.A. This study also underscores the unreliability of treating imaginative extrapolation from decision-science research involving the general public as a valid method for determining the vulnerability of judges to other biases that might constrain their effectiveness in performing tasks such as applying rules of evidence. This method is useful for generating hypotheses worthy of testing. *See, e.g.*, Frederick Schauer, *On the Supposed Jury-Dependence of Evidence Law*, 155 U. PA. L. REV. 16 (2006) (discussing whether judges should limit themselves to the same evidence as juries, and arguing that testing should be done to determine whether judges fall prey to the same problems of bias that juries do). But when held forth as an "explanation" supported by "scientific evidence," this form of exposition confuses story-telling plausibility with empirical proof.

predictably divide the public. Their *job* is to decide those sorts of cases neutrally, and our evidence supports the inference that they have both the capacity and disposition to carry it out.

That such a result defies public perceptions should not come as any sort of surprise. Numerous studies have found that members of the general public themselves can be expected to conform their assessments of evidence and their interpretation of rules to the stake they have in legal outcomes that affirm the status of their groups and their own standing within them.[195] These studies, we have emphasized, are *not* a reliable basis for drawing inferences about the in-domain reasoning processes of judges. But the one sort of inference that they *do* support is that members of the public can be expected to perceive judges to be biased in cases the outcomes of which are invested with antagonistic cultural meanings even when the outcomes of those cases reflect neutral decisionmaking.[196]

That conclusion is, in fact, the *bad news* associated with our study results: the reliable convergence of culturally diverse judges on genuinely neutral outcomes has *no connection at all* to how untrained members of the public perceive the neutrality of those judges' decisions. Again, because citizens lack the elements of professional judgment—the "situation sense"—that lawyers and judges acquire through their training and experience, citizens *do not have the capacity* to discern those aspects of the case and the governing legal rules pertinent to assessing the neutrality or validity of judicial resolutions of them. On the contrary, in precisely those cases in which public anxiety about the cultural neutrality of the law is likely to be highest, identity-protective cognition will predictably *disable* members of the public from using their usually reliable lay prototypes of valid decisionmaking to assess cases outcomes. In that circumstance, no matter how expertly and impartially judges decide, the sense of the public—or at least those who belong to the cultural group whose identity is denigrated by the decision—will be disposed to see judges' decisions as "politically biased."[197]

This problem is exactly parallel to the one that scientists face when empirical issues on which they possess expertise become entangled in culturally contested meanings. Obviously, *doing* valid science does not in itself *communicate* the validity of scientific research: people lack the expertise to *see* validity for themselves; they must rely on cues and processes that help

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195 *See generally* Sood, *supra* note 12.

196 *See* Kahan, *Cognition of Law*, *supra* note 9, at 59-60; Kahan, Hoffman, Braman, Evans, & Rachlinski, *supra* note 46, at 892-93.

197 *See* Kahan, *Neutral Principles, Motivated Cognition*, *supra* note 9, at 36-37.

them to reliably recognize who knows what about what.[198] The capacity of members of the public to interpret those cues is compromised when propositions of risk or fact become symbols of the status of competing cultural groups.[199] In that sort of "polluted science-communication environment,"[200] just doing valid science—including the part of valid science that consists of communicating validity *to other scientists*—will do nothing to silence public confusion and agitation.

Fixing this science communication problem is the aim of a new science of science communication.[201] This subdivision of decision science uses empirical methods to identify the various dynamics that enable people to recognize as valid scientific insights that they could never verify for themselves. It also aims to understand, empirically, how those processes can be disrupted, and how society can effectively preempt such disruptions and counteract them when strategies of prevention fail.

Exploiting the benefits of the science of science communication will demand appropriate adjustments to myriad institutional practices. The sorts of conscious interventions necessary to protect the science communication environment from contamination are not self-executing. An integral part of the science of science communication, then, is to identify programs of implementation that appropriately reconfigure the processes for science-informed policymaking, the norms of science-generating and -consuming professions, and the structure of university training of scientists and public-policymaking professionals.

The law has a similar communication problem. *Doing* and *communicating* neutral decisionmaking are as different from one another as *doing* and *communicating* valid science. Just as solving the science communication problem demands scientific knowledge and appropriate institutional reforms, so solving the law's neutrality communication problem will require appropriate acquisition and use of empirical knowledge of a sort aimed at expanding understanding of *how* people come to recognize the neutrality of the law and *what* law should do to make its neutrality fully recognizable.

There is one critical difference, however, between the science communication problem and the neutrality communication problem. Unlike scientists, judges are expected *both* to make valid decisions *and* communicate the validity of their work to the public. It is widely recognized that the

198 *See* KARL POPPER, CONJECTURES AND REFUTATIONS: THE GROWTH OF SCIENTIFIC KNOWLEDGE 8-9, 30, 36 (2d ed. 1965) (criticizing British sensory empiricism, which posited that the only valid currency of justified belief is personal observation).

199 *See* Dan M. Kahan, *A Risky Science Communication Environment for Vaccines*, 342 SCI. 53, 53 (2013).

200 Dan M. Kahan, *Why We Are Poles Apart on Climate Change*, 488 NATURE 255, 255 (2012).

201 Kahan, *supra* note 78.

experience of liberal neutrality in law depends on the public's confidence that the law is genuinely impartial. The practice of reason giving reflected in judicial opinions is understood to be intrinsic to the rule of law precisely because public assurance of the law's neutrality depends on their access to a reasoned account of the neutral, impartial grounds for courts' decisions.

The legal profession is doing well, our study suggests, in equipping judges to be neutral decisionmakers. But the very ubiquity and persistence of conflict over whether judges are in fact deciding cases on neutral grounds is a testament to how little the profession knows, and how poorly equipped its members are, to *communicate* the neutrality of the law. That deficit in lawyers' "situation sense" is itself a barrier to citizens' enjoyment of the *value* that neutral judicial decisionmaking confers on them.

CONCLUSION

The motivations for conducting the study described in this Article were two. The first, narrower and more immediate one was to examine whether judicial decisionmaking is "ideologically biased." The results of the study, which was designed to remedy methodological defects that prevent drawing valid inferences from existing studies, supply reason to discount the pervasive claim that judges are "politicians in robes."

The second, more general, and much more generally important, aim was to demonstrate the need for making judging an *evidence-based* profession. Like other experts, judges are endowed with expert professional judgment—"situation sense," in Llewellyn's terms. In law no more than in any other profession, the use of empirical methods cannot plausibly be viewed as an alternative to either the role of shared experience in generating professional judgment or the successful acquisition and proficient use of such judgment by individual practitioners.

But also like the professional judgment of all other manner of experts, the suitability of lawyers' "situation sense" for the decisionmaking task that they must perform inevitably depends on its being informed by empirical *facts*, the nature and significance of which will evade confident detection by casual reflection. The disciplined methods of observation, measurement, and inference that are distinctive of science furnish the most reliable basis—the only reliable basis—for determining what those facts are. The legal profession comprises norms of collective self-reflection and -assessment that can be expected to instill in their members the habits of mind and the dispositions necessary to solve the neutrality communication problem and like challenges, but only if those processes are informed by valid understandings of how the world actually works.

Perfecting the profession of *doing justice* thus depends on the advent of a new *science of judging*.[202]

[202] *See* Kahan, *Cognition of Law*, *supra* note 9; Kahan, *Neutral Principles, Motivated Cognition*, *supra* note 17, at 58-71.

APPENDIX A. REGRESSION MODELS

A. *Statutory Interpretation Problems*

The hypotheses relating to the impact of identity-protective cognition on the legal reasoning of the different subject types were tested with multivariate analyses. The models for Littering and Disclosure appear in Table A1 and Table A2, respectively. Each model contains predictors for the problem version ("imm" = 1 for assignment to "immigrant aid," "imm" = 0 for assignment to "construction worker"; "pro-life" = 1 for assignment to "pro-life center," = 0 for assignment for "pro-choice center"); for subject type (dummy coded with member of the public as reference category); the continuous cultural worldview measures ("hfac" for hierarchy–egalitarianism, and "ifac" for individualism–communitarianism), each of which is centered at 0; and appropriate cross-product interaction terms that measure the interaction of the cultural worldviews and experimental assignments separately for each subject type. Predictors are added in groups to promote more ready interpretation of the regression output.

1. Littering Problem

Models 1 and 2 of Table A1 add predictors for assignment to the "immigrant aid" version of Littering and for cultural worldviews and corresponding cross-product interactions, respectively. The positive sign of the coefficient for "imm" (b = 0.33, p < 0.01) indicates that for the subjects considered as a whole the likelihood of finding a violation was higher in the "immigrant aid" than in the "construction worker" version of the problem. The positive coefficients for the two cross-product interaction terms in Model 2—"hfac_x_imm" (b = -0.50, p < 0.01) and "ifac_x_imm" (b = 0.26, p < 0.05)—indicate that the *relative* probability of finding a violation in the "immigrant aid" version as opposed to the "construction worker" version increased as subjects became more hierarchical and individualistic; correspondingly, the relative probability of finding a violation in that version of the problem as opposed to the "construction worker" version decreased as subjects became more egalitarian and communitarian. Because Models 1 and 2 do not include predictors relating to the types of subjects, they should be interpreted as effects for subjects "on average."

The predictors added to Model 3 account for differences between the responses of the various subject types. The substantial improvement in the fit of the Model (ΔLR $\chi 2$ = 143.3(18), p < 0.01) supports the inference that in

fact the predictors in Model 2 do not operate uniformly across members of the public, law students, lawyers, and judges.

Table A1: Multivariate Regression Analysis for *Littering*

Model	1		2		3	
Imm	**0.33**	(3.18)	**0.34**	(3.26)	0.27	(1.69)
Hfac			-0.08	(-1.12)	**-0.34**	(-3.41)
Ifac			0.1	(0.09)	**-0.29**	(-2.81)
hfac_x_imm			**0.50**	(4.65)	**0.77**	(5.32)
ifac_x_imm			**0.26**	(2.42)	**0.46**	(3.02)
student					**-0.66**	(-2.95)
lawyer					**-1.32**	(-4.24)
Judge					**-1.59**	(-5.52)
student_x_imm					0.10	(0.31)
lawyer_x_imm					-0.01	(-0.01)
judge_x_imm					-0.01	(-0.04)
hfac_x_student					**0.55**	(2.30)
hfac_x_lawyer					-0.02	(-0.05)
hfac_x_judge					0.54	(1.94)
ifac_x_student					0.19	(0.93)
ifac_x_judge					0.49	(1.83)
ifac_x_lawyer					0.36	(1.17)
student_x_hfac_x_imm					-0.45	(-1.32)
student_x_ifac_x_imm					-0.42	(-1.32)
lawyer_x_hfac_x_imm					-0.74	(-1.59)
lawer_ifac_x_imm					-0.47	(-1.21)
judge_x_hfac_x_imm					**-0.91**	(-2.45)
judge_x_ifac_x_imm					-0.63	(-1.59)
LR $\chi 2$	**10.1(1)**		**53.2(5)**		**196.5(23)**	
$\Delta LR\ \chi 2$			**43.0(4)**		**143.3(18)**	

Note: $N = 1502$. Outcome variable is ruling (1 = violation, 0 = no violation). Predictor estimates are logit coefficients with z-test statistic indicated parenthetically. Bolded typeface indicates predictor coefficient, model LR $\chi 2$, or incremental change in model LR $\chi 2$ is significant at $p < 0.05$. Listwise deletion for missing data.

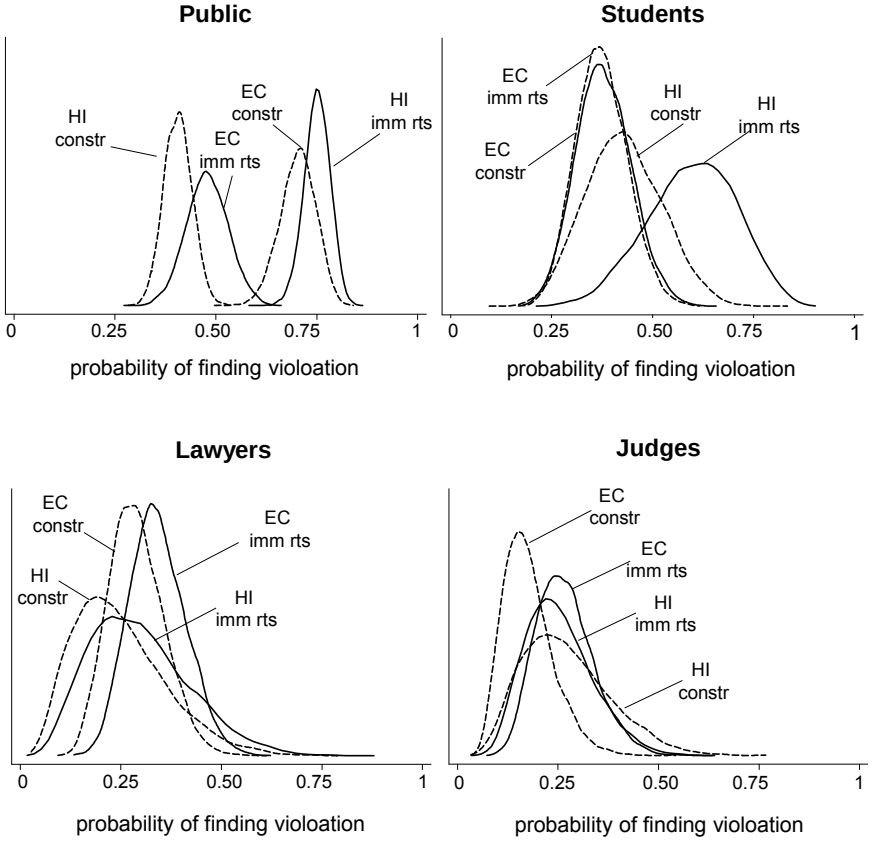
It is readily apparent from Model 3 that members of the public were more inclined to find a violation in the "construction worker" version than were other types of subjects. The predictors for being a student (b = -.66, p < 0.01), a lawyer (b = -1.32, p < 0.01), and a judge (b = -1.59, p < 0.01) reflect how being the indicated type of subject as opposed to being a member of the public influences the probability of finding a violation in the "construction worker" version of the problem, when cultural worldviews are "controlled for" (i.e., when the predictor values for hfac and ifac are set at their mean value, 0). The coefficients for each of those predictors are negative, indicating that members of the public, on average, are more inclined to find a violation in the "construction worker" version of the problem than the other subject types.

The coefficient for "imm" now reflects how much more likely a member of the public is to find a violation in "immigrant aid" than in "construction worker" when that member of the public is "average" in cultural worldview. The sign of that predictor is positive (b = 0.27), implying that a member of the public is still more inclined to find a violation in the "immigrant aid" version, although this propensity is, for what it is worth, only "marginally significant" (p = 0.09).

Also readily apparent from the output of Model 3 is the impact that cultural outlooks have on members of the public. The coefficients for both "hfac" (b = -0.34, p < 0.01) and "ifac" (b = -0.29, p < 0.01), are negative, and those for "hfac_x_imm" (b = 0.77, p < 0.01), and "ifac_x_imm" (b = 0.46, p < 0.01), are both positive. These results reflect the strong impact—visible in the summary data (Figure 5)—that members of the public were inclined to polarize along the lines consistent with the predicted impact of identity-protective cognition: that is, as they became more hierarchical and individualistic, members of the public became more inclined to find a violation in the "immigration-aid" version and less so in the "construction worker" version; as they became more egalitarian and communitarian, they displayed the opposite decisionmaking tendency.

The remaining information in the regression is less readily accessible. Figuring out how much more or less a judge is affected by his cultural outlooks in either the "immigrant aid" or "construction worker" version of the problem than is a member of the public or a law student, or a law student is than a lawyer, or a lawyer than a member of the public or a judge requires *adding* appropriate combinations of Model 3 predictors. It is the sign and magnitude of those sums and not the sign and magnitude of individual predictor coefficients that must thus be examined to assess the competing study hypotheses.

Figure A1: Simulated Probabilities of Finding a Violation in *Littering*



Note: Figure A1 is derived from a Monte Carlo simulation based on regression Model 3, Table A1. Predictors for cultural worldviews set at +1 for both hierarchy and individualism and -1 for both in the case of "Hierarchical Individualist" ("HI") and "Egalitarian Communitarian" ("EC") decisionmakers, respectively. The curves reflect the probability density distribution for the predicted probability that the indicated subject type will find a violation in the indicated version of the problem. The most likely predicted outcome is the probability corresponding to the apex of the curve; probabilities higher or lower become progressively smaller as one approaches the values at the extreme tails of the curve.

Statistical simulation furnishes the most straightforward and reliable means of making the relevant comparisons.[203] Figure A1 displays simulated probability distributions for each of the relevant combination of subject types, worldviews, and experimental assignments. The distributions reflect

[203] *See* GELMAN & HILL, *supra* note 146, at 137-51; King, Tomz & Wittenberg, *supra* note 148, at 351-53 (explaining that simulation is preferable to analytical methods because, among other things, it "can provide accurate answers even when no analytical solutions exist").

the entire multivariate normal distribution for the regression model estimates of the predicted probabilities associated with relevant combinations of predictors.[204]

Based on the simulated values, the predicted probability that a member of the public will find that the defendants committed a violation in the "immigrant aid" version of the problem is 28% higher (± 14%) if that member of the public has moderately hierarchical and individualistic values than if that individual has moderately egalitarian and communitarian ones. By the same token, the predicted probability that a member of the public will find that the defendants committed a violation in the "construction worker" version of the problem is 30% higher (± 12%) if that member of the public has moderately egalitarian and communitarian values than if that individual has moderately hierarchical and individualistic ones.

The interaction of the experimental assignment with the cultural worldviews of student decisionmakers is less dramatic but still evinces modest effects consistent with identity-protective cognition. The biggest impact is on a Hierarchical Individualist student, whose predicted probability of finding a violation is 17% higher (± 28%) in the "construction worker" version than in the "immigrant aid" version. The difference is not statistically significant, however, at the conventional $p < 0.05$ level.

For lawyer and judge decisionmakers, in contrast, the impacts are inconsistent with identity-protective cognition. Indeed, whether an Egalitarian Communitarian decisionmaker is a lawyer or a judge, the predicted probability that he or she will find a violation in the "immigrant aid" version is higher than it is in the "construction worker" version. If that decisionmaker is a lawyer, the probability that he or she will find a violation in the "immigrant aid" worker version is lower if the decisionmaker is a Hierarchical Individualist than if the decisionmaker is an Egalitarian Communitarian. These patterns are contrary to the ones associated with identity-protective cognition, although the magnitudes of all these effects differ by an amount that is neither practically nor statistically significant.

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204 *See* King, Tomz & Wittenberg, *supra* note 148, at 349.

Table A2: Multivariate Regression Analysis for *Disclosure*

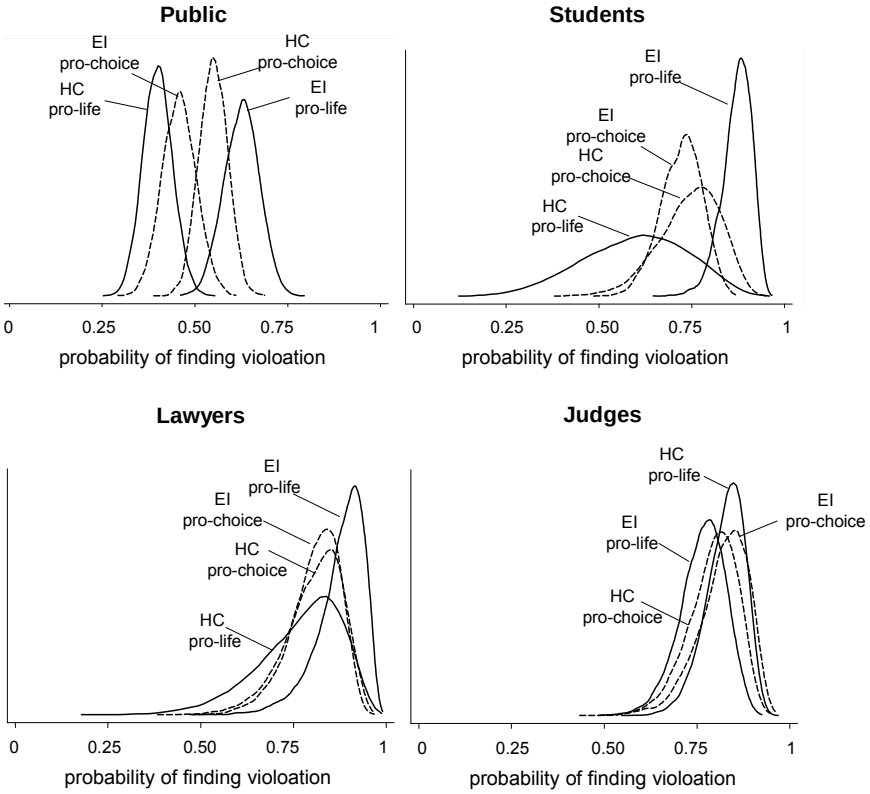
Model	1		2		3	
pro-life	0.08	(-0.70)	0.10	(0.91)	0.04	(0.25)
Hfac			-0.10	(-1.30)	0.11	(1.19)
Ifac			-0.09	(-1.12)	-0.07	(-0.72)
hfac_x_pro-life			**-0.29**	(-2.64)	**-0.39**	(-2.80)
ifac_x_pro-life			**0.22**	(2.01)	0.26	(1.78)
Student					**1.03**	(4.22)
Lawyer					**1.48**	(5.74)
Judge					**1.47**	(4.78)
student_x_pro-life					0.12	(0.32)
lawyer_x_pro-life					0.17	(0.38)
judge_x_pro-life					-0.12	(-0.32)
hfac_x_student					-0.27	(-1.11)
hfac_x_lawyer					-0.19	(-0.58)
hfac_x_judge					-0.15	(-0.54)
ifac_x_student					-0.16	(-0.72)
ifac_x_judge					0.00	(-0.01)
ifac_x_lawyer					0.13	(0.43)
student_x_hfac_x_pro-life					0.11	(0.29)
student_x_ifac_x_pro-life					0.31	(0.86)
lawyer_x_hfac					-0.09	(-0.17)
lawer_ifac_x_pro-life					-0.35	(-0.77)
judge_x_hfac_x_pro-life					0.61	(1.51)
judge_x_ifac_x_pro-life					-0.33	(-0.82)
LR $\chi 2$	0.5(1)		**31.1(5)**		**182.4(23)**	
$\triangle LR\ \chi 2$			**30.1(4)**		**151.3(18)**	

Note: $N = 1472$. Outcome variable is ruling (1 = violation, 0 = no violation). Predictor estimates are logit coefficients with z-test statistic indicated parenthetically. Bolded typeface indicates predictor coefficient, model LR $\chi 2$, or incremental change in model LR $\chi 2$ is significant at $p < 0.05$. Listwise deletion for missing data.

2. Disclosure Problem

Table A2 presents the regression analyses for subject responses to the Disclosure problem. The coefficient for "pro-life" in Model 1 (b = 0.08, p = 0.80) is only trivially different from zero, implying that, overall, subjects were not meaningfully more likely to find a violation in the "pro-life center" version than the "pro-choice center" version.

Figure A2: Simulated Probabilities of Finding a Violation in *Disclosure*



Note: The figure is derived from a Monte Carlo simulation based on Regression Model 3, Table A2. Predictors for cultural worldviews set at +1 for hierarchy and -1 for individualism and -1 for hierarchy and +1 for individualism in the case of Hierarchical Communitarian ("HC") and Egalitarian Individualist ("EI") decisionmakers, respectively. The curves reflect the probability density distribution for the predicted probability that the indicated subject type will find a violation in the indicated version of the problem. The most likely predicted outcome is the probability corresponding to the apex of the curve; probabilities higher or lower become progressively smaller as one approaches the values at the extreme tails of the curve.

Model 2 adds predictors for cultural worldviews. The negative coefficient for "hfac_x_pro-life" (b = 0.29, p < 0.01) and the positive one for "ifac_x_pro-life" (b = .22, p < 0.05) indicate that, for the sample as a whole, subjects became more disposed to find a violation in the "pro-life center" version relative to the "pro-choice center" version as their outlooks became more egalitarian and individualistic and, correspondingly, more disposed to find a violation in the "pro-choice center" relative to the "pro-life center" version as their outlooks became more hierarchical and communitarian. These patterns are again consistent with the predicted influence of identity-protective cognition.

It is apparent from Model 3 that students (b = 1.03, p < 0.01), lawyers (b = 1.48, p < 0.01), and judges (b = 1.47, p < 0.01) were all more disposed to find a violation in the "pro-choice center" version than were members of the public. But again, simulating predicted probabilities is the most straightforward way to extract from the model information relevant to the study hypotheses (Figure A2).

The effects are less dramatic than in Littering, but the simulated values again support the inference of identity-protective cognition in the case of members of the public. A moderately egalitarian and individualistic member of the public is 17% (± 13) more likely to find a violation in the "pro-life center" version than in the "pro-choice version" of the problem, whereas a moderately hierarchical communitarian individual is 15% (± 10) *less* likely to do so.

The simulated probabilities likewise suggest that identity-protective cognition influenced the reasoning of the students. An egalitarian individualist student decisionmaker, for example, is 15% (± 13) more likely to find a violation in the pro-life center version than in the pro-choice center version.

Again, the effects for lawyer and judge decisionmakers are inconsistent with the inference of identity-protective cognition. None of the relevant differences in the probabilities of finding a violation conditional on worldview and experimental assignment are practically or statistically significant. This conclusion is illustrated by the high degree of overlaps in the relevant probability density distributions.

B. *Risk Perceptions*

Table A3 sets forth separate regression models for each of the societal-risk perception scales.[205] Predictors include the continuous cultural

[205] *See supra* subsection III.A.3.

worldview measures ("hfac" for hierarchy–egalitarianism and "ifac" for individualism–communitarianism), each of which is centered at 0; each subject type (dummy coded with member of the public as reference category); and appropriate cross-product interaction terms that measure the interaction of the cultural worldviews and each subject type separately.

Environmental risk perceptions are known to polarize individuals who are relatively hierarchical and individualistic, on the one hand, and those who are relatively egalitarian and communitarian on the other.[206] The regression model for the environmental risk scale—a composite of the subjects' responses to items assessing their perception of the risks associated with global warming, nuclear power, air pollution, and water pollution—corroborates that the risk perceptions of members of the public fit this pattern. The negative coefficients for "hfac" (b = -0.45, p < 0.01) and "ifac" (b = -0.25, p < 0.01) show that subjects who were members of the general population sample became more skeptical of environmental risk as they became more hierarchical and individualistic, and more risk-sensitive as they became more egalitarian and communitarian.

In general, law students, lawyers, and judges were *less* concerned than members of the public with environmental risks. That conclusion is reflected in the negative coefficients of the predictors for those subject types (b = -0.27, p < 0.01; b = -0.44, p < 0.01; and b = -0.18, p < 0.01, respectively), which reflect the impact on environmental risk perceptions of being one of those types of subjects *as opposed to* a member of the public, when cultural worldviews are "controlled for" (by the setting of the predictor values for hfac and ifac at 0, their means).

Social deviancy risks—those associated with recreational drug use, with premarital sex, and with policies to combat domestic terrorism—generate polarization among individuals whose worldviews are hierarchical and communitarian, on the one hand, and those whose worldviews are egalitarian and individualistic, on the other.[207] The regression analysis is consistent with this expectation, although the coefficients for the hierarchy–egalitarianism predictor (b = 0.15, p < 0.01) and the individualism–communitarian predictor (b = 0.02, p = 0.33) indicate that for members of the public, all of the variance between individuals with these outlooks could be attributed to differences along the hierarchy–egalitarian worldview dimension. This was likely a result of the loss of strength in the worldview predictors associated with the

206 *See generally* Kahan, *supra* note 13.

207 Kahan & Braman, *supra* note 111 ; *see also* Wildavsky & Dake, *supra* note 125, at 44 (noting that "adherents of hierarchy perceive acts of social deviance to be dangerous," while egalitarians "show much less concern" about such acts).

relatively low degree of variance with respect to the social deviancy risks in the general population, combined with the modest reliability of the two-item abbreviated version of the individualism–communitarianism scale. It is clear from the cross-product interaction terms, however, that differences in the communitarian–individualism predictor *did* contribute to variance for members of the student sample (b = -0.10, p < 0.05). It is also clear that being a student (b = -0.50, p < 0.01) and being a lawyer (b = -0.47, p < 0.01), but not being a judge (b = -0.04, p = 0.40), as opposed to being a member of the public predicted less concern with social deviancy risks when worldviews were held constant at their mean.

Table A3: Multivariate Regression Analysis for Societal Risk Perceptions.

	Environmental		Social deviance	
hfac	**-0.45**	(-20.48)	**0.15**	(7.17)
ifac	**-0.25**	(-10.42)	0.02	(0.97)
student	**-0.27**	(-5.22)	**-0.50**	(-10.12)
lawyer	**-0.44**	(-7.03)	**-0.47**	(-7.84)
judge	**-0.18**	(-3.49)	-0.04	(-0.85)
mhfac_x_student	0.10	(1.81)	-0.04	(-0.85)
hfac_x_lawyer	**0.19**	(3.58)	0.04	(0.73)
mhfac_x_judge	**0.13**	(1.97)	0.03	(0.52)
ifac_x_student	0.04	(0.90)	**-0.10**	(-2.03)
ifac_x_lawyer	**0.18**	(3.30)	0.02	(0.40)
ifac_x_judge	**0.01**	(0.20)	-0.04	(-0.62)
Constant	**0.16**	(-6.50)	**0.16**	(6.58)
R^2	**0.31**		**0.18**	

Note: N = 1523. The dependent variables are indicated societal risk scales. Regression weights are unstandardized OLS coefficients, with corresponding t-statistic indicated parenthetically. Bold typeface denotes that the indicated coefficient or model R^2 is statistically significant at p < 0.05.

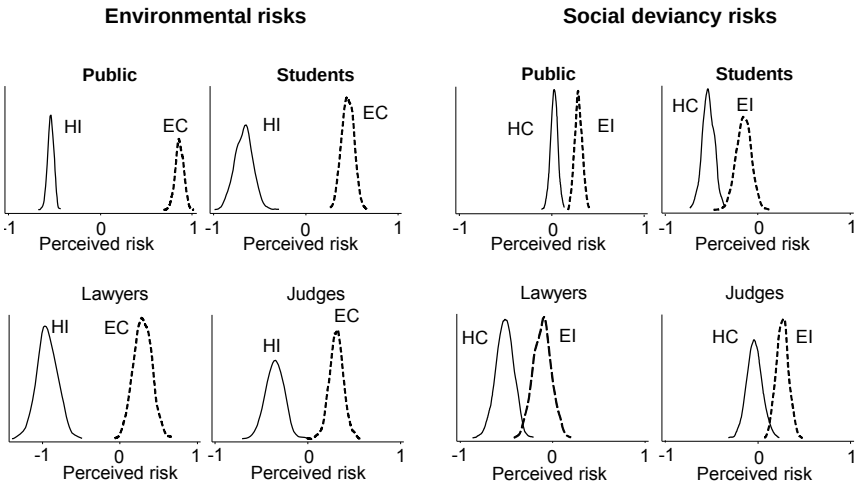
Again, interpretation of the information in the regression models in relation to the study hypotheses requires considering the impact of appropriate combinations of predictors. Figure A1 graphically reports the regression model–estimated impacts of subjects' worldviews on their risk perceptions.

The results corroborate the idea that the risk perceptions of all subject types varied in patterns consistent with the inference that cultural cognition

shapes their processing of information about the relevant classes of risk. The impacts vary in size. For example, the estimated impact on members of the public is larger than that of the other subject types for environmental risks and smaller than the estimated impact on the other subject types for social deviancy risks.

But unlike the results observed in relation to the legal problems, the impact of cultural worldviews is manifest and substantial for all subject types. The results do not furnish support, then, for the hypothesis that either the professional judgment characteristic of lawyers and judges or the experience of being a judge meaningfully counteracts identity-protective reasoning for out-of-domain judgments.

Figure A3: Societal Risks



Note: The curves reflect the probability density distribution for the estimated score on the indicated societal risk scale. Scores on the scales are normalized, with the mean set at 0 and with units in standard deviations. Predictors for cultural worldviews set at +1 for both hierarchy and individualism for "Hierarchical Individualist" ("HI"); at -1 for both for "Egalitarian Communitarian" ("EC"); at +1 for hierarchy and -1 for individualism in the case of Hierarchical Communitarian ("HC"); and at -1 for hierarchy and +1 for individualism for Egalitarian Individualist ("EI"), respectively. The most likely estimated score is the one corresponding to the apex of the curve; probabilities higher or lower become progressively smaller as one approaches the values at the extreme tails of the curve.

APPENDIX B. STUDY INSTRUMENT

A. *Legal Reasoning Problems*

Introduction. In this study, we would like to know how you would decide certain cases if you were a judge. You will first read about the case and then be asked to tell us how you would rule.

[*All subjects do both 1 & 2.*
Rotate order of 1 & 2.
Randomize assignment to italicized and underscored conditions.]

1. Littering

You are a trial court judge presiding over a "civil penalty" action filed by the U.S. government under a law known as the Wildlife Environment Protection Act ("the Act" or "WEPA"). WEPA prohibits "littering, disposing, or depositing any form of garbage, refuse, junk, or other debris" on land designated as a national wildlife preserve. The Government has charged the defendants, [*a group of construction workers,*/members of a immigrants' aid group,] with 400 separate WEPA violations (each subject to a $500 fine) for dispersing, and thereafter leaving unattended, 400 ten-gallon reusable plastic dispensers of drinking water in a wildlife refuge located in the desert along the United States–Mexico border. [*The defendants placed the dispensers along a fifty-mile stretch in which they had been hired to do work on the construction of a "border fence" to keep out illegal aliens. The defendants anticipated drinking the water as they completed their work over a three-month period.*/Defendants placed the dispensers along a fifty-mile stretch known to be traversed by undocumented migrant farm workers. The defendants' expected the water to be found and consumed by the migrant workers, who face a high risk of death from dehydration during attempts to cross the border.]

The issue raised by the defendants' motion is how to interpret WEPA. The defendants argue that they had not permanently discarded the plastic water dispensers but instead temporarily placed them in the desert with an expectation that they would be used and reused. Such behavior, they argue, does not count as "littering, disposing, or depositing any form of garbage, refuse, junk, or other debris" under WEPA.

The Government focuses on the terms "depositing," "junk," and "other debris." On its reading, the defendants "deposited" the water dispensers in the desert by placing them there and then leaving them unattended. The

terms "junk" and "debris," the government argues, are by design very broad and cover all manmade materials, including reusable plastic water dispensers, foreign to the habitat of wildlife in the preserve.

LITTERING_ruling. We are interested in knowing how you might decide the defendant's motion to dismiss. That motion should be granted if the defendant's interpretation of WEPA is correct but denied if the Government's competing interpretation is correct. Of course, if you were really a judge in the case, you'd do more legal research, and hear arguments from the parties. But at this point, based on the materials you've read, which of these two rulings do you think you would make, and how confident do you think you'd be in your decision?

Select one:

( ) Based on my analysis of the statue, I would conclude that the defendants DID violate WEPA.

( ) Based on my analysis of the statue, I would conclude that the defendants did NOT violate WEPA.

2. Disclosure

You are one judge of three on an appellate court. *D*, a former state police officer, is appealing his conviction under a state law known as the Government Information Disclosure Act ("Act" or "GIDA"). Evidence at trial shows that *D* told his sister, the owner of [*a noncommercial "family planning" center that provides free information on birth control and abortion services*/a religious "family planning" center that counsels women on alternatives to abortion], that *C*, an applicant for a job at the center, belonged to a local [*anti-abortion*/abortion-rights] group.

The relevant language of GIDA states:

No government employee shall disclose to anyone outside the government confidential information relating to an identifiable private citizen unless such disclosure is subject to a statutory exception. Any government employee who *knowingly* violates this Act shall be guilty of a class C Felony.

The information about *C*'s membership in the [*anti-abortion*/abortion-rights] group came from a police investigatory file. There is no dispute that the information was "confidential" under GIDA and not subject to any of the law's exceptions (for example, the one allowing disclosure "when necessary to avert an imminent threat to public health or safety").

Testifying on his own behalf, *D* admitted that he "knew" that disclosure "was against departmental policy on confidential investigatory files," but stated that he "had no idea" GIDA existed, and hence didn't "know"

disclosure violated that or any other statute. He testified that he released the information about *C*'s group membership because he was "outraged" that *C*, in light of his [*anti-abortion*/abortion-rights] activities, would seek employment at the family-planning service operated by *D*'s sister.

The issue before the appeals court is a narrow one: under GIDA, what exactly does the prosecution have to prove for a jury to find a defendant "knowingly violated this Act"?

At trial, the defense requested the court to issue an instruction to the jury stating, "Because a person commits a crime under GIDA only when he 'knowingly violates' the Act, you should return a verdict of guilty *only* if you find beyond a reasonable doubt that *D knew* his conduct violated GIDA."

The court rejected this request. Instead it instructed the jury, "Because a person commits a crime under GIDA only when he 'knowingly violates' the Act, you should return a verdict of 'guilty' *only* if you find beyond a reasonable doubt that *D* (1) *knew* he was disclosing government information that (2) he *knew* was 'confidential' and that (3) he *knew* 'related to a private citizen.'" The court told the jury that it "*need not* find, however, that *D* (4) *knew* his conduct violated GIDA or any other criminal law."

If the court of appeals finds that the trial court's instruction reflected a correct reading of the Act, the court of appeals will uphold the conviction. If the court of appeals finds the trial court's instruction was incorrect, the court of appeals will reverse the conviction and order a new trial at which the trial court will be required to give the instruction requested by the defense.

DISCLOSURE_ruling. We are interested in knowing how you might decide this case if you were on the court of appeals. Of course, if you were really a judge in the case, you would do more legal research, hear arguments from the parties, and consult with your fellow judges. But at this point, based on the materials you've read, which of these two rulings do you think you would make, and how confident do you think you'd be in your decision?

Select one:

( ) Based on my analysis of the statue, I would conclude that the only facts the prosecution has to prove are (1) that the defendant employee knew he or she was disclosing information; (2) that the defendant employee knew that the information was "confidential"; and (3) that the defendant employee knew the information "related to" an "identifiable private citizen."

( ) Based on my analysis of the statute, I would conclude that in a criminal case under GIDA the prosecution must prove not only that the defendant knew that he or she was disclosing information that he or she knew was confidential and knew related to an identifiable private citizen; it must also

prove that the defendant employee knew that disclosure of such information would violate GIDA.

B. *Risk Perceptions*

Introduction. Now we would like to ask you about your views about risks. As individuals and as a society, we face a number of possible hazards. Some threaten people's health, safety, or prosperity directly. Others threaten health, safety, or prosperity indirectly through the damage they can impose on the environment or the economy. How much risk do you believe each of the following poses to human health, safety, or prosperity? [0 "no risk at all"; 1 "Very low risk"; 2 "Low risk"; 3 "Between low and moderate risk"; 4 "Moderate risk"; 5 "Between moderate and high risk"; 6 "High risk"; 7 "Very high risk."]

[RANDOMIZE ORDER]

1. AIRPOLLUTION. Air pollution
2. WATERPOLLUTION. Water pollution
3. NUKERISK. Nuclear power
4. MARYJRISK. Legalization of marijuana
5. TERROR. Domestic terrorism
6. DRUG. Illegal drug trafficking
7. TEENPREG. Teenage pregnancy
8. WARMING. Global warming

C. *Cultural Worldviews*

Introduction. Finally, we'd like to ask you about some moral and social issues.

[*Rotate order of A & B, randomize order of items*]

A. *Dimension 1 (Individualism–Communitarianism)*

People in our society often disagree about how far to let individuals go in making decisions for themselves. How strongly do you agree or disagree with each of these statements? [1 "Strongly disagree"; 2 "Moderately disagree"; 3 "Slightly disagree"; 4 "Slightly agree"; 5 "Moderately agree"; 6 "Strongly agree."]

1. Sometimes government needs to make laws that keep people from hurting themselves.
2. The government should stop telling people how to live their lives.

B. Dimension 2 (Hierarchy–Egalitarianism)

People in our society often disagree about issues of equality and discrimination. How strongly you agree or disagree with each of these statements? [1 "Strongly disagree"; 2 "Moderately disagree"; 3 "Slightly disagree"; 4 "Slightly agree"; 5 "Moderately agree"; 6 "Strongly agree."]

1. We have gone too far in pushing equal rights in this country.
2. Our society would be better off if the distribution of wealth were more equal.