

THE UNINTENDED CONSEQUENCES OF LOCAL RULES

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Many legal rules are based on hunches about human behavior that have not been tested empirically. A behavioral analysis of these rules can illuminate whether they work as policy makers intended or whether they have unforeseen, systematically negative effects. Behavioral analyses of legal rules, unfortunately, are in short supply. This is particularly true with respect to local procedural rules that govern the everyday operation of trials and are left to the discretion of trial courts.

This Article begins to fill that gap by empirically examining one of these local procedural rules: the one allowing jurors to take notes during trial. Intuitively, few would question the practice of jury note taking. Permitting, even encouraging, jurors to keep track of evidence seems like an obvious way to ensure the fidelity of verdicts, especially as trials and evidence become increasingly complex; however, an empirical test of note-taking reveals that the intuition may be wrong.

More specifically, this Article reports the results from an original experiment that evaluated whether note-taking, under certain circumstances, can affect trial outcomes in unexpected ways. Drawing on literature from behavioral law and economics, this experiment demonstrated that jury note-taking can exacerbate a phenomenon known as “vividness bias,” which is the extent to which vivid information affects social judgment independent of its probative value. This surprising finding has implications for the ways in which heterogeneous, local procedural rules affect the transparency, equity, and accuracy of jury verdicts. And it suggests that there is a compelling need for additional empirical testing of the behavioral intuitions behind procedural rules.

INTRODUCTION	292
I. BACKGROUND	294
A. Contextual Cues and Legal Decision-making	297
B. Local Procedural Rules	301

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II. LEGAL AND EMPIRICAL SCHOLARSHIP ON JURY NOTE-TAKING	303
A. <i>The Legal History</i>	303
B. <i>Empirical Scholarship</i>	308
1. The Birth of Psychological Note Taking Scholarship	308
2. Jury Note-Taking	310
a) Field Studies	311
b) Laboratory Studies	314
III. AN EXPERIMENTAL STUDY: JURY NOTE-TAKING	316
A. <i>The Vividness Bias</i>	317
1. Applications to the Courtroom	320
a) Mode Vividness	320
b) Message Vividness	322
B. <i>Experimental Methodology</i>	324
1. Rationale and Hypotheses	325
a) Vividness	326
b) Note Taking	329
c) Time Delay	330
C. <i>Results</i>	331
IV. IMPLICATIONS AND OBJECTIONS	338
A. <i>Implications</i>	338
B. <i>Objections</i>	342
CONCLUSION	345

INTRODUCTION

Rules that govern the everyday operation of jury trials are the neglected stepchildren of law review literature. Legal academia has been largely silent in examining what types of effects local procedural rules, both formal and informal, might have on substantive legal outcomes.

Behavioral studies in the last few decades establish that small contextual cues can have significant substantive impacts on people's decisions.¹ Yet the substantive impact of contextual cues in one of the most important, discrete, and regulated of contexts—the courtroom—remains essentially unstudied. This Article explains how recent behavioral and cognitive findings suggest that local court rules, which can affect contextual decision making in the courtroom, may have a much deeper impact on substantive justice than is appreciated and are thus worthy of further legal and empirical study. As a jumpstart to empirical work in this area, this Article presents a study measuring the ways in which one apparently minor rule—whether jurors may take notes—can have a substantive im-

¹ See *infra* Part I.A.

pact on how juries reach verdicts. The Article concludes that, minor as they may seem, local court rules can have important substantive implications for how courts dispense justice.

Local procedural rules take many shapes. They govern formalistic issues, including the filing of legal briefs submitted to judges and the format of their contents,² as well as several important aspects of jury trials, including the use of demonstrative evidence, the amount of time parties may spend questioning witnesses, and the length and substance of arguments before the jury.³

Some of the most interesting local procedural rules are the “jury trial innovations” of the past twenty years.⁴ These innovations are largely left to the discretion of individual trial judges to implement, and both theoretical exploration and empirical examination of their aggregate effects are sparse. Perhaps this is because many courts assume that these rules will have a positive effect on trial outcomes and will lead to more accurate judgments. However, these rules, over which there is no clear oversight, may not function in practice in the ways policy makers predict and actually could have systematic negative effects.

Behavioral law and economics studies have identified a variety of cognitive biases to which triers of fact are prone when deciding legal

² See, e.g., 19TH JUD. CIR. CT. LAKE CNTY., ILL. R. 2.01 (governing motions generally and notice); MUSKINGUM, OHIO CNTY. CT. R. § 10, R. 5 (governing the submission of briefs); MILWAUKEE CNTY., WIS. CIR. CT. R. 3.6 (governing the filing of papers).

³ See, e.g., L.A. SUPER. CT. LOCAL R. 3.131 (prohibiting counsel’s use of chalkboard and paper without trial judge consent). See also FED. R. EVID. 611(a) (mandating judicial oversight by the individual trial judge of evidentiary presentations for the purpose of trial economy); ARIZ. R. CIV. P. 16(h) (authorizing judges to issue time limits on trial proceedings); *Johnson v. Ashby*, 808 F.2d 676, 678 (8th Cir. 1987) (affirming trial court discretion to set reasonable limits); *MCI Commc’ns Corp. v. AT&T Co.*, 708 F.2d 1081, 1171–72 (7th Cir. 1983) (upholding trial judge’s twenty-six-day time limit for each party to present its case-in-chief); *SCM Corp. v. Xerox Corp.*, 77 F.R.D. 10, 13–14 (D. Conn. 1977) (recommending time limits).

⁴ These trial innovations include: allowing jurors to take notes; allowing jurors to ask questions of trial witnesses during trial proceedings; allowing jurors to discuss the evidence with each other before they formally deliberate; allowing attorneys to make interim comments on the evidence during lengthy trials to “sum up” witnesses’ testimony; furnishing substantive legal instructions to juries before the presentation of evidence; allowing jurors to watch pre-recorded testimony; and revamping the language of jury instructions. See generally *JURY TRIAL INNOVATIONS* (G. Thomas Munsterman et al. eds., 1997); Martin J. Bourgeois et al., *Nominal and Interactive Groups: Effects of Preinstruction and Deliberations on Decisions and Evidence Recall in Complex Trials*, 80 J. APPLIED PSYCHOL. 58 (1995); Neil P. Cohen, *The Timing of Jury Instructions*, 67 TENN. L. REV. 681 (2000); B. Michael Dann et al., *Can Jury Trial Innovations Improve Juror Understanding of DNA Evidence?*, 90 JUDICATURE 153, 155 (2007); Shari Seidman Diamond et al., *Juror Discussions During Civil Trials: Studying an Arizona Innovation*, 45 ARIZ. L. REV. 1 (2003); Nancy S. Marder, *Bringing Jury Instructions into the Twenty-First Century*, 81 NOTRE DAME L. REV. 449 (2006); Nicole L. Mott, *The Current Debate on Juror Questions: “To Ask or Not to Ask, That Is the Question,”* 78 CHI.-KENT L. REV. 1099 (2003).

cases.⁵ There is very little research demonstrating to what extent procedural rules exacerbate or inhibit these biases. More specifically, there is no research on whether *local* procedural rules, which are heterogeneous and vary significantly within jurisdictions, exacerbate or inhibit these biases.

This Article begins to fill that gap by empirically examining whether one local procedural rule—jury note-taking—has substantive effects on trial outcomes. It then explores whether the best policy is to leave the decision to local courts or to standardize these rules instead.

Part I of the Article reviews the behavioral economics literature relevant to these local procedural rules and then briefly discusses the pertinent rules. Part II focuses on the legal history and existing empirical scholarship relevant to the practice of allowing jurors to take notes during trials. Part III describes an original experimental study that suggests that note-taking can lead to biased legal judgments under certain conditions. Specifically, a phenomenon known as “vividness bias” can systematically affect the legal decisions of jury members who take notes during trial. Part IV discusses the implications of, and potential objections to, these results. It focuses on how biased judgments stemming from the application of local procedural rules can affect the transparency, equity, and accuracy of jurors’ substantive decisions. The Article concludes by calling for additional research. If, as this Article shows, local procedural rules can have detrimental substantive impacts on legal decision-making, broader and more wide-reaching procedural rules—such as federal pleading standards—may have even more dramatic implications for substantive justice.

I. BACKGROUND

Procedural rules are created in three ways. Elected legislatures can create formal, uniform rules, such the Federal Rules of Civil Procedure and their state law counterparts.⁶ Other times, in interpreting procedural rules, the judiciary creates additional substantive law that legal actors must follow. For example, the United States Supreme Court’s *Erie* doc-

⁵ See, e.g., CASS R. SUNSTEIN ET AL., PUNITIVE DAMAGES: HOW JURIES DECIDE (2002); Jon Hanson & David Yosifon, *The Situational Character: A Critical Realist Perspective on the Human Animal*, 93 GEO. L. J. 1 (2004); Reid Hastie & B. Wittenbrink, *Heuristics for Applying Laws to Facts*, in HEURISTICS AND THE LAW (Gerg Gigerenzer & Christoph Engel eds., 2006); Christine Jolls et al., *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471, 1489–1506 (1998); Jeffrey J. Rachlinski et al., *Does Unconscious Racial Bias Affect Trial Judges?*, 84 NOTRE DAME L. REV. 1195 (2009); Jeffrey J. Rachlinski et al., *Heuristics and Biases in Specialized Judges: The Case of Bankruptcy Judges*, 86 B.U. L. REV. 1227 (2006); W. Kip Viscusi, *How do Judges Think About Risk?*, 1 AM. L. & ECON. REV. 26 (1999).

⁶ FED. R. CIV. P.; see also, e.g., CAL. CODE CIV. P.; FL. R. CIV. P.; ILL. R. CIV. P.; N.Y. CIV. PRAC. L. & R.; TEX. R. CIV. P.

trine mandates that a federal trial court sitting in diversity must apply the substantive law of the state in which the federal court is located⁷ and its *Iqbal* doctrine radically has altered the manner in which parties substantively plead their claims in federal court.⁸ Finally, procedural rules can be promulgated by individual courts and judges themselves through authority delegated to them by legislatures.⁹ These first two methods for creating procedural rules apply broadly and uniformly to many legal actors at once and have been studied widely.¹⁰ Procedural rules promulgated by the third method, however, vary from court to court—and from judge to judge—and have not been studied rigorously by legal academia.

Matters left to the discretion of individual trial courts run the gamut from rules governing the form of documents filed in a trial court clerk's office¹¹ to rules governing the actions of jurors during a trial.¹² In contrast to uniform rules enacted by state and federal legislatures and uniform rules enacted by higher courts, these lower court rules are heterogeneous. Further, this heterogeneity means that there is no consistent, elaborated principle for the selected choice of rule.

This heterogeneity and lack of consistent, elaborated principles for these lower court rules raise important questions. First, why are certain procedural matters left to the discretion of individual trial judges? Second, what are the characteristics of these procedural rules? Third, and most importantly, when do these local court rules matter; do any of these heterogeneous local procedural court rules substantively influence trial outcomes?

⁷ *Erie R.R. Co. v. Tompkins*, 304 U.S. 64, 78–79 (1938); see also *Semtek Int'l, Inc. v. Lockheed Martin Corp.*, 531 U.S. 497 (2001) (interpreting *Erie*); *Gasperini v. Ctr. for Humanities*, 518 U.S. 415 (1996) (same); *Hanna v. Plumer*, 380 U.S. 460 (1965) (same); *Byrd v. Blue Ridge Rural Elec. Coop., Inc.*, 356 U.S. 525 (1958) (same).

⁸ *Ashcroft v. Iqbal*, 556 U.S. 662 (2009); see also *Penalbert-Rosa v. Fortuno-Burset*, 631 F.3d 592 (1st Cir. 2011) (interpreting *Iqbal*); *Arista Records, LLC v. Doe 3*, 604 F.3d 110 (2d Cir. 2010) (same); *al-Kidd v. Ashcroft*, 580 F.3d 949 (9th Cir. 2009) (same).

⁹ See, e.g., FED. R. CIV. P. 83 (allowing “a district court, acting by a majority of its district judges, [to] adopt and amend rules governing its practice”). For a fuller discussion of this Rule, see *infra* notes 48–52 and accompanying text.

¹⁰ See, e.g., Bradford R. Clark, *Ascertaining The Laws Of The Several States: Positivism And Judicial Federalism After Erie*, 145 U. PA. L. REV. 1459 (1997); Richard D. Freer, *Some Thoughts on the State of Erie After Gasperini*, 76 TEX. L. REV. 1637 (1998); Jack Goldsmith & Steven Walt, *Erie and the Irrelevance of Legal Positivism*, 84 VA. L. REV. 673 (1998). See also Richard Epstein, *Of Pleading and Discovery: Reflections on Twombly and Iqbal with Special Reference to Antitrust*, 2011 U. ILL. L. REV. 187 (2011); Suja Thomas, *Oddball Iqbal and Twombly in Employment Discrimination*, 2011 U. ILL. L. REV. 215 (2011); Geoffrey C. Westbrook, *Evolutionary Pleading: Should Congress Override the Supreme Court's Unnatural Selection in Ashcroft v. Iqbal to Prevent the Extinction of Civil Rights Cases?*, 45 NEW ENG. L. REV. 205 (2010).

¹¹ See *supra* note 2.

¹² See, e.g., ARIZ. R. CIV. P. 39(f) (governing juror discussions of evidence during trial).

This third question raises a host of intriguing issues. It is well-known that uniform procedural rules, through codification and judicial pronouncement, have substantive effects on trial outcomes.¹³ In contrast, local court rules, including rules of practice before individual judges, are essentially unstudied. While robust behavioral and cognitive research supports the conclusion that contextual cues affect substantive decision-making, almost no studies address whether local procedural rules, which vary widely across trial courts, have substantive effects.

Further, if these rules do have substantive effects on legal outcomes, it is not clear which types of local rules will most likely have substantive effects. For example, rules implicating known biases that may affect juror perceptions of trial evidence may also implicate procedural due process concerns.¹⁴ Currently, local rules are set by individual courts with virtually no empirical information as to their substantive impact and without any academic or professional discussion of the appropriate legal “level” (i.e., individual trial courts, higher courts, or the legislature) at which those decisions should be made.

This Article attempts to jumpstart both research and discussion by examining one of these local procedural rules: juror note-taking. Note-taking is an appropriate rule to examine for several reasons. Although local procedural rules are understudied and undertheorized, juror note-taking is a somewhat more studied procedure. There are a number of judicial opinions that discuss the procedure in at least some detail.¹⁵ Further, there is a robust psychological literature on note-taking generally¹⁶ and a more anemic but visible psycholegal literature on jury note-taking

¹³ See, e.g., Jack B. Jacobs, *The Vanishing Substance-Procedure Distinction in Contemporary Corporate Litigation: An Essay*, 41 SUFFOLK L. REV. 1 (2007); David M. Kinnecome, *Where Procedure Meets Substance: Are Arbitral Procedures a Method of Weakening the Substantive Protections Afforded by Employment Rights Statutes?*, 79 B.U. L. REV. 745 (1999); Jack B. Weinstein, *Procedural Reform as a Surrogate for Substantive Law Revision*, 59 BROOK. L. REV. 827 (1993); see also *supra* note 10.

¹⁴ “Procedural [d]ue [p]rocess ‘delineates the constitutional limits on judicial, executive and administrative enforcement of legislative or other governmental dictates or decisions’” *Jenkins v. Hutton*, 967 F.Supp. 277, 281 (S.D. Oh. 1997) (quoting LAURENCE TRIBE, *AMERICAN CONSTITUTIONAL LAW* § 10-7 at 664 (2d ed. 1988)). “[P]rocedural due process . . . defines what process a person must receive before being deprived of a life, liberty, or property interest.” *Id.* (citing *Howard v. Grinage*, 82 F.2d 1343, 1349 (6th Cir. 1996)). Legal scholars have studied this “uncontroversial” doctrine at length. See ERWIN CHERMERINSKY, *CONSTITUTIONAL LAW: PRINCIPLES AND POLICIES* 546 (Aspen Law & Business 3d ed., 2006); see also Edward Erberle, *Procedural Due Process: The Original Understanding*, 4 CONST’L COMMENT. 339 (1987); Eric J. Mitnick, *Procedural Due Process and Reputational Harm: Liberty as Self-Invention*, 43 U.C. DAVIS L. REV. 79 (2009); Martin H. Redish & William J. Katt, Taylor v. Sturgell, *Procedural Due Process, and the Day-in-Court Ideal: Resolving the Virtual Representation Dilemma*, 84 NOTRE DAME L. REV. 1877 (2009).

¹⁵ See *infra* Part II.A.

¹⁶ See *infra* Part II.B.1.

in particular.¹⁷ The legal history and empirical scholarship allow us to form hypotheses about whether a local procedural rule like jury note-taking can have unintended substantive effects on trial outcomes.

This Part will proceed in two sections. First, it will discuss how contextual cues (for example, evidence framing) affect legal decision-making. Second, it will briefly discuss what local procedural rules are and how they generally might interact with contextual cues to produce substantive effects on trial outcomes. Later Parts of this Article will examine the literature on jury note-taking and will report the results of an experiment which examines whether contextual cues lead to biased outcomes when jurors are allowed to take notes.

A. Contextual Cues and Legal Decision-making

Courts tend to assume that jurors are rational people who make sound legal decisions based on facts they remember accurately and incorporate correctly.¹⁸ However, social science evidence demonstrates that human beings are subject to a “slew of cognitive biases” that may call into question the accuracy of those legal decisions.¹⁹

The decisions we make are remarkably susceptible to the context and the manner in which certain options are presented to us. Seemingly minor contextual cues affect decisions ranging from how altruistic we

¹⁷ See *infra* Part II.B.2.

¹⁸ See *State v. Walker*, 356 S.E.2d 344, 346 (N.C. 1987) (“The law assumes that jurors will follow their instructions and act in a rational fashion.”) (citing *State v. McCraw*, 268 S.E.2d 173 (N.C. 1980)); *McCraw*, 268 S.E.2d at 179 (holding that “a jury is presumed to be rational”); accord Stephen E. Fienberg & Mark J. Schervish, *The Relevance of Bayesian Inference for the Presentation of Statistical Evidence and for Legal Decisionmaking*, 66 B.U. L. REV. 771, 775 n.20 (1986) (“[T]he law assumes that a factfinder should be rational . . .”).

¹⁹ Vito Rispo, *The Power of “Framing Effects” and Other Cognitive Biases*, ADSAVVY, <http://www.adsavvy.org/the-power-of-framing-effects-and-other-cognitive-biases/> (last visited Oct. 4, 2011). Some of these biases include, but are not limited to, inattentional blindness, blind-spot bias, better-than-average bias, introspection illusion, self-serving bias, confirmation bias, attribution bias, representative fallacy, availability fallacy, anchoring fallacy, and the hindsight bias. *Id.* See also Ivan E. Bodensteiner, *The Implications of Psychological Research Related to Unconscious Discrimination and Implicit Bias in Proving Intentional Discrimination*, 73 MO. L. REV. 83 (2008); Linda Hamilton Krieger, *The Content of Our Categories: A Cognitive Bias Approach to Discrimination and Equal Employment Opportunity*, 47 STAN. L. REV. 1161 (1995).

are,²⁰ to the way we stereotype other people,²¹ to what we choose to eat.²²

Furthermore, preferences for an outcome shift predictably when the decision to be made is framed in different ways;²³ the fields of psychology and economics refer to this phenomenon as a “framing effect.”²⁴

Economists argue that framing effects violate standard economic accounts of human rationality.²⁵ Rational decision-making, according to economists, requires logical consistency and coherence across decisions, regardless of the manner in which options are presented.²⁶ For example, if you prefer chicken over pasta, your preference for one over the other should not deviate just because you learn that you could also have fish.²⁷

The idea that our choices are not affected by the contexts that surround those choices has been challenged repeatedly by empirical data in fields ranging from psychology to behavioral economics to advertising.²⁸ In the first major article discussing framing effects, Nobel Prize-winning psychologist Daniel Kahneman and Amos Tversky designed a simple but elegant experiment demonstrating the concept in everyday reasoning. Kahneman and Tversky gave people a choice between two options with respect to a fictitious disease that would kill 600 people: (a) a program that would save 200 people or (b) a program where the odds were 33%

²⁰ Katie Liljenquist et al., *The Smell of Virtue: Clean Scents Promote Reciprocity and Charity*, 21 *PSYCHOL. SCI.* 381, 382 (2010) (finding that participants in clean-scented rooms expressed greater interest in volunteering and donating money to charity than did control participants).

²¹ Wendy van Rijswijk & Naomi Ellemers, *Context Effects on the Application of Stereotype Content to Multiple Categorizable Targets*, 28 *PERSP. & SOC. PSYCHOL. BULL.* 90 (2002).

²² Patricia van Assema et al., *Framing of Nutrition Education Messages in Persuading Consumers of the Advantages of a Healthy Diet*, 14 *J. HUM. NUTRITION & DIETETICS* 435 (2001).

²³ In other words, the underlying decision is the same but the surface features of the decision vary. See, e.g., Vicki L. Smith, *How Jurors Make Decisions: The Value of Trial Innovations*, in *JURY TRIAL INNOVATIONS*, *supra* note 4, at 7, 16 (G. Thomas Munsterman et al. eds., 1997).

²⁴ See, e.g., Daniel Kahneman & Amos Tversky, *Choices, Values, and Frames*, in *CHOICES, VALUES, AND FRAMES* 5 (Daniel Kahneman & Amos Tversky eds., 2000).

²⁵ See, e.g., Daniel Kahneman & Amos Tversky, *Preface to CHOICES, VALUES AND FRAMES*, *supra* note 24, at xiii–xvi; Eldar Shafir & Robyn A. LeBoeuf, *Rationality*, 53 *ANN. REV. PSYCHOL.* 491, 495–97 (2002); Shlomi Sher & Craig R. M. McKenzie, *Framing Effects and Rationality*, in *THE PROBABILISTIC MIND: PROSPECTS FOR BAYESIAN COGNITIVE SCIENCE* (Nick Chater & Mike Oaksford eds., 2008); Amos Tversky & Daniel Kahneman, *Rational Choice and the Framing of Decisions*, 59 *J. BUS.* S251 (1986); Amos Tversky & Daniel Kahneman, *The Framing of Decisions and the Psychology of Choice*, 211 *SCIENCE* 453 (1981).

²⁶ See, e.g., Benedetto De Martino et al., *Frames, Biases, and Rational Decision-Making in the Human Brain*, 313 *SCIENCE* 684, 684 (2006); Tversky & Kahneman, *The Framing of Decisions and the Psychology of Choice*, *supra* note 25, at 453. This assumption is sometimes referred to as “extensionality” or “invariance.” See Benedetto et al., *supra* at 684.

²⁷ Mark Kelman et al., *Context-Dependence in Legal Decision Making*, in *BEHAVIORAL LAW & ECON.* 61 (Cass R. Sunstein ed., 2000).

²⁸ See *supra* note 25.

that 600 people would be saved and 67% that no one would be saved.²⁹ These people tended to be risk averse and chose option A, even though the expected value of both options is the same.³⁰ Kahneman and Tversky then presented a second group of people with the same question, but framed it differently.³¹ This time the programs were framed this way: (a) a program that would allow 400 people to die or (b) a program where the odds were 33% that nobody will die and 67% that 600 will die.³² This time, even though these options were identical to the first set of options in outcome (but framed differently), people overwhelmingly became risk-seeking and chose option B;³³ framing the issue as the certain death of 400 people dramatically altered the ultimate decisions that the subjects made.³⁴

These framing effects, which change the contextual cues people use to solve problems but do not change the underlying substantive information, became the backbone of Kahneman and Tversky's "prospect theory," which involves the framing of economic losses and gains.³⁵ Framing effects and contextual cues are not limited to decisions about hypothetical diseases or financial matters; they also shape judgments that have legal implications. For example, in a famous experiment on eyewitness identification, psychologist Elizabeth Loftus asked experimental participants to watch films of traffic accidents.³⁶ After watching the films, participants answered questions related to the accidents which were framed differently: some participants were asked to rate the speed of one of the vehicles when it *contacted* the other vehicle while others were asked to rate the speed of the vehicle when it *smashed into* the other vehicle.³⁷ Participants who were asked the vehicle's speed when it *smashed into* the other vehicle rated the speed of the vehicle significantly higher than participants who were asked the vehicle's speed when it *con-*

²⁹ Tversky & Kahneman, *The Framing of Decisions and the Psychology of Choice*, *supra* note 23, at 453.

³⁰ *Id.* One-third of 600 is 200, the same number of people who would be saved under option A.

³¹ *Id.*

³² *Id.* Two-thirds of 600 is 400, the same number of people who would be saved under option B.

³³ *Id.*

³⁴ *Id.*

³⁵ Daniel Kahneman & Amos Tversky, *Prospect Theory: An Analysis of Decision Under Risk*, 47 *ECONOMETRICA* 263, 263 (1979). Prospect theory states that people underweigh outcomes that are merely probable in comparison with outcomes that are obtained with certainty. This tendency, called the certainty effect, contributes to "risk aversion in choices involving sure gains and to risk seeking in choices involving sure losses." In sum, anticipated losses hurt more than their equivalent gains.

³⁶ Elizabeth Loftus, *Reconstructing Memory: The Incredible Eyewitness*, 8 *PSYCHOL. TODAY* 116, 117 (1974).

³⁷ *Id.* at 119.

tacted the other vehicle.³⁸ In a related series of studies, similar tactics resulted in eyewitnesses remembering erroneous details, such as smashed glass at the intersection.³⁹ Thus, contextual cues can affect not only our judgments but also our memories for facts. These empirical findings have obvious implications for trials by jury.

One specific type of framing effect that concerns juror decision-making is the vividness bias. Vividness bias describes a phenomenon by which salient information—information that is concrete or invokes mental imagery—can have a disproportionate impact on our memory for facts and our attendant social judgments.⁴⁰ For example, people perceive highly salient causes of death such as shark attacks to be much more likely to kill them than so-called “silent killers” such as heart disease, though the opposite is true.⁴¹

When the vividness bias collides with jury decision-making, the result can bias trial outcomes. In a study examining the vividness bias in mock jurors, psychologists varied the ways in which they framed the prosecution and defense evidence in a mock trial.⁴² Sometimes mock jurors were presented with very vivid prosecution evidence or very vivid defense evidence.⁴³ Mock jurors’ guilt judgments demonstrated that they more easily recalled vivid evidence than pallid evidence, even though the probative values of each description of evidence were the same.⁴⁴

This study demonstrates a powerful application of Kahneman and Tversky’s framing effects to the courtroom—one that has implications for local procedural rules, like jury note-taking.⁴⁵ Though it may appear irrational, the way in which a decision is framed can greatly impact our decisions. This suggests that we should pay attention not only to the objective content of information that a jury receives, “but also to the way in which that content is presented.”⁴⁶

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ See, e.g., RICHARD NISBETT & LEE ROSS, HUMAN INFERENCE: STRATEGIES AND SHORTCOMINGS OF SOCIAL JUDGMENT 62 (1980).

⁴¹ See Sarah Lichtenstein et al., *Judged Frequency of Lethal Events*, 4 J. EXPERIMENTAL PSYCHOL.: HUM. LEARNING & MEMORY 551, 552 (1978).

⁴² Robert M. Reyes et al., *Judgmental Biases Resulting from Differing Availabilities of Arguments*, 39 J. PERSONALITY & SOC. PSYCHOL. 2, 2 (1980).

⁴³ *Id.* at 4.

⁴⁴ *Id.* at 5.

⁴⁵ A more robust discussion of the vividness bias is reserved for Part III of this Article, which discusses an experimental test that examines the interaction of the vividness bias with jury note-taking.

⁴⁶ See SMITH, *supra* note 23, at 17.

B. Local Procedural Rules

Local procedural rules generally are matters that are left to the discretion of individual trial courts.⁴⁷ Federal Rule of Civil Procedure 83(a) states that “a district court, acting by a majority of its district judges, may adopt and amend rules governing its practice” provided the “rule must be consistent with—but not duplicate—federal statutes and rules.”⁴⁸ Along these lines, Rule 83 was amended in 1985 to empower local judges to create rules of practice before their courts.⁴⁹ The current version of that amendment, now codified as Federal Rule of Civil Procedure 83(b), reads: “A judge may regulate practice in any manner consistent with federal law, [certain federal rules], and the district’s local rules.”⁵⁰

The original intent of Rule 83 was to regulate the “machinery of running” the local courts so that the Federal Rules of Civil Procedure could be “adjusted easily and without friction to the differing habits and customs of lawyers throughout the country.”⁵¹ However, the effect of Rule 83 has been somewhat different. As commentators have pointed out, the drafters of Rule 83 would have been quite surprised by the thousands of local court rules and individual judges’ practice rules that multiplied after Rule 83 was enacted.⁵² Many of these local practice rules deal with procedural issues that could potentially have substantive effects on legal outcomes.

Local procedural rules are not always codified. Ostensibly, state and federal case law recognize that many matters of trial procedure are within the sound discretion of the trial court.⁵³ Although Federal Rule

⁴⁷ These rules can be codified, as in rules or codes, or they can be the product of judicial case law. See *infra* notes 48–54 and accompanying text. These matters are also, in some instances, left up to individual judges within those courts as well, as part of a judge’s local practice rules.

⁴⁸ FED. R. CIV. P. 83(a).

⁴⁹ See FED. R. CIV. PROC. 83 advisory committee’s note.

⁵⁰ FED. R. CIV. PROC. 83(b).

⁵¹ 6 “*Proceedings of Meeting of Advisory Committee on Rules for Civil Procedure*” 1515 (Feb. 20-25, 1936). See also Myron J. Bromburg & Jonathan M. Korn, *Individual Judges’ Practices: An Inadvertent Subversion of The Federal Rules of Civil Procedure*, 68 ST. JOHN’S L. REV. 1, 7 (1994) (quoting and synthesizing the *Proceedings*).

⁵² See Bromburg & Korn, *supra* note 51, at 7.

⁵³ See *Reed v. Philadelphia, Bethlehem & New Eng. R.R. Co.*, 939 F.2d 128, 133 (3d Cir. 1991) (“In matters of trial procedure such as that involved here, the trial judge is entrusted with wide discretion because he is in a far better position than we to appraise the effect of the improper argument of counsel.”); *Layton v. Whitley*, No. 1512, 1989 WL 6899, at *2 (9th Cir. Jan. 20, 1989) (“The trial court’s power to control the conduct of trial is broad. Necessarily many matters of trial procedure must be left to the discretion of trial judges.”); *People v. Moscatello*, 251 N.E.2d 532, 543 (Ill. 1969) (“The granting of discretion to the trial judge recognizes the superior vantage point of one who sees and hears the witnesses when the record cannot reproduce actual trial conditions; the practical necessities of judicial administration in procedural matters; and the necessity of the trial judge’s leeway in evolutionary phases of the development leading to fixed rules of law. Where matters of the administration of the court’s

83 and its state law counterparts rarely are cited as authority for this proposition, these matters of trial procedure frequently involve the local procedural issues within the purview of a trial judge's rules of practice or the rules of the local court to which that judge belongs.⁵⁴

Accordingly, state and federal rules and case law open the door for trial judges to enact procedural rules to govern the trials over which they preside.⁵⁵ There are various potential rationales for doing so. First, policy makers and higher courts may deem many of these local procedural rules harmless.⁵⁶ Thus deviations among courts and individual judges within the same court would not cause concern. Second, appellate judges and legislators may have engaged in a cost-benefit analysis in which they recognize that they do not have the resources to oversee all of the local procedural issues that can arise in any given trial.⁵⁷ Thus, even if some of these local procedural rules are not harmless, the harm does not warrant removing the trial judge's discretion over the matter. Third, perhaps local trial judges should be given the flexibility to accommodate local conditions and needs that arise during their trials.⁵⁸ Of course, as one commentator has warned, it would be too easy to give too much weight to this third explanation: many national problems have local manifestations, but local symptoms do not always warrant local cures.⁵⁹ This may be true especially when a local procedural rule has systematic negative effects on legal outcomes. Finally, it also may be that there is no particular theory underlying this delegation; it may be that local court

business are involved, such as for example, whether to allow a pretrial conference, discretion may be practically absolute. In matters of trial procedure such as order of proof or ruling on rebuttal testimony, discretion may be very wide"); *State v. Sorrell*, 568 A.2d 376, 378 (Vt. 1989) (holding that, on a defendant's motion for acquittal for failure to identify him as the perpetrator, a trial court's admission of additional identification evidence at the hearing "out of an abundance of caution" was not error because such matters of trial procedure are within the wide discretion of the court).

⁵⁴ See *supra* note 53. All involve a local procedural issue within the court's local rules or discretion, and none cite Federal Rule 83. *Id.*

⁵⁵ These local procedural rules themselves can be formal—memorialized in published local court rules or published individual practice rules—and informal—as in a judge's preference for allowing jurors to take notes or not during a trial.

⁵⁶ See, e.g., *Sorrell*, 568 A.2d at 378 ("Such matters of trial procedure are common grist for the exercise of wide discretion by the trial court.").

⁵⁷ See, e.g., *Moscatello*, 251 N.E.2d at 543 (discussing the practical necessities of judicial administration in procedural matters).

⁵⁸ David M. Roberts, *The Myth of Uniformity in Federal Civil Procedure: Federal Civil Rule 83 and District Court Local Rulemaking Powers*, 8 U. PUGET SOUND L. REV. 537, 549 (1985); see also *Moscatello*, 251 N.E.2d at 543 ("The granting of discretion to the trial judge recognizes the superior vantage point of one who sees and hears the witnesses when the record cannot reproduce actual trial conditions.").

⁵⁹ Roberts, *supra* note 58, at 549; cf. John C. Drapp III, *The National Standard of Care in Medical Malpractice Actions: Does Small Area Analysis Make It Another Legal Fiction?*, 6 QUINNIPIAC HEALTH L.J. 95, 101–09 (2003) (discussing the nationalization of the medical standard of care).

procedures have been widely viewed as unimportant and not worth explicit theorization.⁶⁰

This area of legal scholarship, however, is undertheorized; to the extent scholars have examined these local procedural rules, they have evaluated whether or not those rules conflict with state or federal ones.⁶¹ These scholars have not examined whether we should care if these heterogeneous local practices conflict with each other. For example, if some local practice has potentially negative systematic effects on legal outcomes, it should trouble us (1) that these local practices exist, and (2) that certain courts employ them while others do not.

II. LEGAL AND EMPIRICAL SCHOLARSHIP ON JURY NOTE-TAKING

To jumpstart the scholarship on the behavioral effects of local procedural rules, this Part discusses one of the most visible of these rules: jurors' ability to take notes. Specifically, this Part presents two substantial fields that have yet to be fully synthesized: the long history of local procedures on juror note-taking and the psychological literature on the empirical impacts of jurors taking notes. The disconnect between judicial attitudes toward jurors' ability to take notes and the empirical scholarship on the procedure illustrates the problems this Article identifies.

A. *The Legal History*

The judicial debate over the efficacy of local trial procedures like juror note-taking is an old but interesting one. The first judicial opinions that discussed note-taking appeared in state courts in the late 1800s and early 1900s.⁶² These opinions were highly critical of the procedure and largely outlawed it.⁶³ They reasoned that literate note-taking jurors would exert undue influence over the illiterate members of the jury.⁶⁴

⁶⁰ See, e.g., *Layton v. Whitley*, No. 1512, 1989 WL 6899, *2 (9th Cir. Jan. 20, 1989) (describing the broad scope of the trial court's power as merely a practical necessity).

⁶¹ See, e.g., Bromburg & Korn, *supra* note 51, at 8 (noting that individual judges may promulgate their own practice, as it is not inconsistent with the Federal Rules); Roberts, *supra* note 58, at 549 (discussing Rule 83's role limiting local rulemaking power).

⁶² See, e.g., *Cheek v. State*, 35 Ind. 492, 495 (1871) ("The juror is to register the evidence, as it is given, on the tablets of his memory, and not otherwise.").

⁶³ See *Thornton v. Weaber*, 112 A.2d 344, 348 (Pa. 1955) (noting that it had been "almost universal custom" to disallow the practice).

⁶⁴ See *Watkins v. State*, 393 S.W.2d 141, 145 (Tenn. 1965); NANCY S. MARDER, *THE JURY PROCESS* 107 (Foundation Press 2005); Steven D. Penrod & Larry Heuer, *Tweaking Commonsense: Assessing Aids to Jury Decision Making*, 3 PSYCHOL., PUB. POL'Y & L. 259, 263 (1997).

Modern courts require citizens who sit on a jury to be able to read and write English.⁶⁵ Nonetheless, throughout much of the twentieth century, courts still were resistant to allowing jurors to take notes.⁶⁶ Although they abandoned the undue influence rationale that literate jurors would influence illiterate jurors, courts began articulating other perceived disadvantages to jury note taking.⁶⁷ For example, although jurors are now required to be literate, courts have ruled that those who take notes may still be viewed by those who do not take notes as having an informational advantage, which might lead non note-takers to defer to the opinions of note-takers.⁶⁸ Similarly, other courts observed that note-taking jurors might be seen as more alert and informed simply by virtue of taking notes.⁶⁹

Other courts have advanced different rationales. Some worried that the act of taking notes would distract jurors who chose not to take notes.⁷⁰ Moreover, these courts feared that note-taking would distract the note-taker *herself* by preventing her from evaluating the demeanor and credibility of trial witnesses.⁷¹ Other courts have voiced similar concerns that the note-taker will not be able to keep up with the speed of the trial and will become lost.⁷²

Other courts worried that note-taking could lead to bias; courts expressed concern that the notes taken—perhaps those taken under rushed or hurried circumstances—would not be representative of the evidence at trial or, worse, that the notes would be factually inaccurate.⁷³ These courts worried that this may happen particularly if jurors are inexperi-

⁶⁵ 28 U.S.C. § 1865(b)(2) (2006); *see also* MARDER, *supra*, note 64 (“This early justification, however, has little bearing on today’s jurors who are statutorily required to be able to write in English in order to be considered qualified to serve, at least in federal court.”).

⁶⁶ *See, e.g., Thornton* 112 A.2d at 348 (disallowing the practice because it was “almost universal custom” to do so); Penrod & Heuer, *supra* note 56, at 263 (discussing the legal history of jurors taking notes).

⁶⁷ *See, e.g., United States v. Davis*, 103 F. 457, 470 (W.D. Tenn. 1900) (noting that jurors who took notes would gain undue influence in discussing the case when consulting notes to settle conflicts of memory), *aff’d* 107 F. 753 (6th Cir. 1901); *Fischer v. Fischer*, 142 N.W.2d 857, 863 (Wis. 1966) (noting that jurors might “attach special emphasis” to facts in notes).

⁶⁸ *See, e.g., Davis*, 103 F. at 470; *Thornton*, 112 A.2d at 348 (noting that even a judge assumed that a juror who took notes was more informed or intelligent); *Fischer*, 142 N.W.2d at 863.

⁶⁹ *See, e.g., Thornton*, 112 A.2d at 347–48; *State v. Smith*, No. 429-41-8-I, 1999 WL 1259857 (Wash. Ct. App. Dec. 17, 1999) (unpublished); Penrod & Heuer, *supra* note 64, at 267–68.

⁷⁰ *See Fischer*, 142 N.W.2d at 863; Penrod & Heuer, *supra* note 64, at 267–68.

⁷¹ *See, e.g., State v. Smith*, No. 429-41-8-I, 1999 WL 1259857, at *1 (Wash. Ct. App. Dec. 17, 1999) (unpublished) (“The trial judge . . . cautioned [the jury] that any note taking should not interfere with assessing the demeanor of witnesses.”).

⁷² *See, e.g., Thornton*, 112 A.2d at 348.

⁷³ *See, e.g., Davis*, 103 F. at 469.

enced with note-taking.⁷⁴ Further, note-takers might rely on their notes at the expense of their own memories, exacerbating the effects of the factual inaccuracies within their notes and distorting their view of the evidence presented at trial.⁷⁵

Still other courts worried about institutional bias; they expressed concern that unrepresentative notes might favor prosecutors and plaintiffs, who present their case first.⁷⁶ They worry that jurors might pay more attention at the beginning of a trial than at the end and that juror notes may over-represent the plaintiff's evidence while underrepresenting the defendant's evidence.⁷⁷

Finally, other trial judges were preoccupied with the logistics of note-taking; they worried that note-taking would delay trials by increasing the amount of time jurors would take to deliberate and resolve a legal dispute.⁷⁸ Indeed, some progressive late-nineteenth- and early-twentieth-century trial courts permitted note-taking, but only on the condition that additional time would not be required.⁷⁹

In the mid-to-late twentieth century, however, both scholars and professional legal organizations began questioning the assumptions underlying the prohibition on note-taking. In the 1960s, the American Bar Association issued its *Standards Relating to Trial by Jury*, which recommended that jurors take notes regarding the evidence presented to them.⁸⁰ Similarly, the Federal Judicial Conference recommended that jurors be allowed to take notes, provided those notes would remain confidential.⁸¹ Meanwhile, academic articles concerning jury note-taking began to surface in publications including the *Journal of the American*

⁷⁴ See, e.g., *Fischer*, 142 N.W.2d at 863.

⁷⁵ See Leonard B. Sand & Steven Alan Reiss, *A Report on Seven Experiments Conducted by District Court Judges in the Second Circuit*, 60 N.Y.U. L. REV. 423, 448 (1985).

⁷⁶ *But see Gasparovic v. Reed*, 5 Pa. D. & C. 531, 534 (Pa. Ct. Com. Pl. 1924) (finding no error when a juror took copious notes of testimony favorable to the plaintiff during the trial).

⁷⁷ See Victor E. Flango, *Would Jurors Do A Better Job if They Could Take Notes?*, 63 JUDICATURE 436, 437 (1980).

⁷⁸ See *Cahill v. Mayor of Baltimore*, 98 A. 235, 238 (Md. 1916) ("We see no objection in a juror taking notes in a case complicated with figures, during the examination of testimony, and being permitted to take these to the jury room, for the purpose of refreshing his recollection, provided the trial court is satisfied that such action will not delay the trial, or interfere with the juror following the evidence.").

⁷⁹ See, e.g., *Lilly v. Griffin*, 71 Ga. 535, 540 (1883); *Tift v. Towns*, 63 Ga. 237, 242 (1879); *Cahill*, 98 A. at 238.

⁸⁰ AM. BAR ASS'N, PROJECT ON MINIMUM STANDARDS FOR CRIMINAL JUSTICE: STANDARDS RELATING TO TRIAL BY JURY § 4.2 (1968). This principle exists today as Principle 13(A) of the American Bar Association's Principles for Juries and Jury Trials. American Bar Association, Principles for Juries and Jury Trials (2005), <http://www.americanbar.org/content/dam/aba/migrated/jurprojectstandards/principles.authcheckdam.pdf>.

⁸¹ Judicial Conference Committee on the Jury System, *The Jury System in the Federal Courts*, 26 F.R.D. 409, 424 (1960).

Judicial Society,⁸² *Judicature*,⁸³ and the *Chicago-Kent Law Review*,⁸⁴ further highlighting the issue for reform. Perhaps buoyed by the public positions of these well regarded organizations and the ease with which this reform could be implemented,⁸⁵ courts began to retreat from their longstanding restrictions on jury note-taking. By the late 1970s, nine states had repealed their prohibitions on the practice.⁸⁶

Meanwhile, courts began to consider the potential benefits of allowing jurors to take notes. In a legal sea change on the subject, courts began taking the position that note-taking would provide a beneficial memory aid to jurors.⁸⁷ As one particularly progressive trial judge stated in a 1940 opinion, “Judges and lawyers make notes, why not jurors? Certainly . . . [note-taking would] allow them to more intelligently consider the evidence.”⁸⁸ In a complete reversal from prior opinions, other courts opined that note-taking would not only refresh a juror’s recollection, but that it also may allow jurors to follow the proceedings more attentively.⁸⁹ Similarly, courts now believe that note-taking will improve juror decision-making and recollection of trial evidence.⁹⁰ Perhaps stemming from that view, courts also consider note-taking to lead to increased juror recall and satisfaction with respect to the trial process and the verdict.⁹¹

⁸² *Should Jurors Be Allowed to Take Notes?*, 32 J. AM. JUDICATURE SOC’Y 57 (1948).

⁸³ *Should Jurors Take Notes?*, 56 JUDICATURE 139 (1972); *Readers’ Viewpoint: Taking Sides on Taking Notes*, 56 JUDICATURE 298 (1972).

⁸⁴ Arthur L. Newell, *May a Juror Take Notes in Illinois?*, 46 CHI-KENT L. REV. 223 (1969).

⁸⁵ See Gordon Bermant, *Courting the Virtual: Federal Courts in an Age of Complete Inter-Connectedness*, 25 OHIO N.U. L. REV. 527, 550 (1999).

⁸⁶ Henry Friendly, *On Judging the Judges*, in STATE COURTS: A BLUEPRINT FOR THE FUTURE 70, 73 (Theodore J. Fetter ed., 1978) (describing the prohibition of note-taking as “a needless obstacle” and noting that nine states have repealed it).

⁸⁷ See *United States v. Carlisi*, 32 F. Supp. 479, 483 (E.D.N.Y. 1940).

⁸⁸ *Id.*; see also *United States v. Campbell*, 138 F. Supp. 344, 353 (N.D. Iowa 1956) (describing the arguments offered against jury note-taking as “far-fetched” and “imaginary”); *Mirasso v. State*, 323 N.E.2d 249, 251 (Ind. Ct. App. 1975) (discussing the fallibility of memory and the complexities of the modern courtroom in acknowledging a trial court’s discretion to allow jury note-taking); *Watkins v. State*, 393 S.W.2d 141, 147 (Tenn. 1965) (conceding that jury note-taking might be “commendable” in some instances).

⁸⁹ See *Cohee v. State*, 942 P.2d 211, 212 (Okla. Crim. App. 1997) (“We find that jurors may benefit from notes in several ways: (1) jurors may follow the proceedings more closely and pay more attention as they take notes for later use; (2) jurors’ memories may be more easily and reliably refreshed during deliberations; (3) jurors may make fewer requests to have portions of trial transcript read back during deliberations; and (4) the ability to use their notes may result in increased juror morale and satisfaction.”).

⁹⁰ *Id.*

⁹¹ See, e.g., *State v. Doleszny*, 844 A.2d 773, 781–82 (Vt. 2004) (describing several jury trial innovations and mentioning that empirical research found increased satisfaction with the process among mock jurors).

Consistent with these (until recently) empirically untested notions of the potential benefits of note-taking, the legal and judicial pendulum has swung firmly in favor of allowing trial judges to permit juror note-taking.⁹² Currently, nearly all fifty states permit note-taking by either statute or common law.⁹³ Although the United States Supreme Court has not addressed this issue directly,⁹⁴ all federal courts of appeal agree that trial judges have this authority.⁹⁵ Courts have even held that judges may allow juror note-taking *sua sponte*, without first receiving a request or motion from counsel.⁹⁶ And at least one appellate court has held that a trial court could *require* that jurors take notes, albeit the court did so with some reservations.⁹⁷ Although some jurisdictions have required judges to give admonishing instructions to jurors to ensure that notes are used correctly,⁹⁸ the judicial view appears to be positive and generally accepting of the procedure.⁹⁹

Interestingly, both the judiciary's initial resistance and later acceptance of jury note-taking appear to be shaped by anecdotal, armchair analysis from appellate courts.¹⁰⁰ It might not be surprising to see the pendulum swing from one extreme to another due to the changing views

⁹² See *infra* notes 93–99. Interestingly, note-taking has not been made mandatory in any jurisdiction.

⁹³ See, e.g., ARIZ. R. CIV. P. 39(p); ARIZ. R. CRIM. P. 18.6(d); COLO. R. CIV. P. 47(t); COLO. R. CRIM. P. 16(f); IND. R. CT. JURY 20; ME. R. CIV. P. 45(e); WYO. R. CIV. P. 39.1(a); WYO. R. CRIM. P. 24.1(a); *State v. Mejia*, 658 A.2d 571, 576–77 (Conn. 1995); *People v. DiLuca*, 85 A.D.2d 439, 445 (N.Y. App. Div. 1982); *State v. Rose*, 748 A.2d 1283, 1286 (R.I. 2000).

⁹⁴ The closest the United States Supreme Court has come to addressing the issue of jury note-taking is its opinion in *Agnew v. United States*, 165 U.S. 36, 45 (1897). *Agnew* faced trial for misappropriation of funds, and objected when the trial court allowed a juror to take notes of the proceedings. Because the record did not demonstrate that any juror had actually taken notes during the trial, the Court declined to address the defendant's challenge. *Id.*

⁹⁵ See, e.g., *United States v. Wild*, 47 F.3d 669, 672 (4th Cir. 1995); *United States v. Porter*, 764 F.2d 1, 12 (1st Cir. 1985); *United States v. Rhodes*, 631 F.2d 43, 45 (5th Cir. 1980); *United States v. Maclean*, 578 F.2d 64, 65 (3d Cir. 1978); *United States v. Johnson*, 584 F.2d 148, 157–58 (6th Cir. 1978); *United States v. Anthony*, 565 F.2d 533, 536 (8th Cir. 1977); *United States v. Riebold*, 557 F.2d 697, 705–06 (10th Cir. 1977); *United States v. Bertolotti*, 529 F.2d 149, 159–60 (2d Cir. 1975); *United States v. Braverman*, 522 F.2d 218, 224 (7th Cir. 1975); *United States v. Pollack*, 433 F.2d 967, 967–68 (5th Cir. 1970); *Toles v. United States*, 308 F.2d 590, 594 (9th Cir. 1962); *Goodloe v. United States*, 188 F.2d 621, 621–22 (D.C. Cir. 1950).

⁹⁶ *People v. Hues*, 704 N.E.2d 546, 548–49 (N.Y. 1998).

⁹⁷ *United States v. Standard Oil Co.*, 316 F.2d 884, 897 (7th Cir. 1963) (noting that the practice could lead to reversible error in other circumstances).

⁹⁸ See, e.g., *United States v. Darden*, 70 F.3d 1507 (8th Cir. 1995); *Toles*, 308 F.2d at 594; *People v. Dexheimer*, 214 A.D.2d 898 (N.Y. App. Div. 1998); *Price v. State*, 887 S.W.2d 949 (Tex. Crim. App. 1994).

⁹⁹ However, recent opinions express some reservations about the practice. See, e.g., *Darden*, 70 F.3d at 1537 (characterizing note-taking as “not a favored procedure” and worrying that jurors who take notes will dominate jury deliberations in lengthy and complex trials).

¹⁰⁰ For example, compare the reasoning in the authorities cited at *supra*, notes 62–64, 65–75, 77–79 with the reasoning in the authorities cited at *supra*, notes 87–91, 93–98.

of influential political and academic groups within the profession. But notably, this change happened without almost any empirical evidence of the actual effects that note-taking has on jurors' attitudes, behaviors, and judgments. Rigorous empirical tests of juror note-taking, though few in nature, emerged in the 1980s and continued through the 1990s and 2000s.¹⁰¹ The results of those studies did not provide wholesale support for the views of judges and legal academics that note-taking would aid recall, lead to better judgments, and lead to greater satisfaction.¹⁰²

B. *Empirical Scholarship*

The empirical literature is not so uncritically accepting of the perceived benefits of allowing decision-makers to take notes; scholars have attempted to study the phenomenon in a systematic way free of "haphazard" appellate court speculations about the merits and disadvantages of the procedure.¹⁰³ Nonetheless, despite a dearth of evidence supporting the efficacy of jury note-taking—for example, that note taking improves recall or that jurors are more satisfied with their verdicts, empirical researchers have written that, at best, note taking has "no harmful consequences."¹⁰⁴ Although the sparse literature on jury-note taking is somewhat conflicted, it tends to converge on this middling, no-harm-no-foul assessment.¹⁰⁵

This section will examine the history of empirical scholarship on jury note-taking. First it will discuss the origins of note-taking scholarship in the educational psychology literature. Second, it will discuss the shift in the scholarship from academic to non-academic settings, including the modern courtroom.

1. The Birth of Psychological Note-Taking Scholarship

Scholars disagree about the current state of academic note-taking scholarship. As late as 2007, one researcher declared that "very little is

¹⁰¹ See, e.g., Penrod & Heuer, *supra* note 64; Larry Heuer & Steven Penrod, *Increasing Juror Participation in Trials Through Note Taking and Question Asking*, 79 JUDICATURE 256 (1996).

¹⁰² See Heuer & Penrod, *supra* note 101, at 261 (indicating a shift in judges' perceptions from essentially undecided before exposure (median = 4.5) to a moderate endorsement after exposure (median = 3.7)); Penrod & Heuer, *supra* note 64, at 280 ("[O]ur findings offer little affirmative support for the purported advantages of note taking and questions.").

¹⁰³ See Penrod & Heuer, *supra* note 64, at 262 ("Appellate judges writing these decisions appear content to use their own anecdotal experiences and armchair analyses to evaluate the procedures . . .").

¹⁰⁴ *Id.* at 280 (characterizing the procedure as "innocuous"); Heuer & Penrod, *supra* note 101, at 256.

¹⁰⁵ See Penrod & Heuer, *supra* note 64, at 280 (concluding that some might argue that the lack of purported harmful consequences therefore means these procedures should not be modified).

known about the cognitive processes that underlie effective . . . note taking.”¹⁰⁶ Conversely, another researcher described note-taking as “one of the first and most established [types of] cognitive technology.”¹⁰⁷ Spanning several decades, significant empirical scholarship supporting the latter view has attempted to isolate and study those cognitive processes that underlie note-taking.¹⁰⁸ The first wave of substantial empirical study of note-taking can be traced back to the writings of educational psychologists in the early 1970s.¹⁰⁹ Nearly all of these studies focused on how people take lecture notes in an academic setting.¹¹⁰ These early studies examined whether taking notes during a lecture leads to better retention of the material covered in the lecture.¹¹¹ Surprisingly, early experiments revealed conflicting evidence as to whether or not note-taking facilitates retention of new information.¹¹² Although later experiments appeared to support the view that note-taking does facilitate the retention of new information, they did so cautiously.¹¹³

Nonetheless, educational psychologists attempted to develop a coherent theory for how note-taking aids recall. Two dueling theories originally were proposed as the mechanisms by which note-taking enhances memory for facts.¹¹⁴ The first hypothesis—“encoding”—involves the processing of physical sensory input into a person’s memory.¹¹⁵ According to the encoding hypothesis, taking notes transforms the information, as the listener is hearing it, into a subjectively more meaningful form; the process of recording notes itself facilitates learning.¹¹⁶ In contrast, an alternative hypothesis theorized that simply having the notes for later review is more important than encoding the information as the lecture is given.¹¹⁷ Educational psychologists refer to this as the “external storage”

¹⁰⁶ Stephen T. Peverly et al., *What Predicts Skill in Lecture Note Taking?*, 99 J. EDUC. PSYCHOL. 167, 167 (2007).

¹⁰⁷ Tamas Makany et al., *Optimising the Use of Note-taking as an External Cognitive Aid for Increasing Learning*, 40 BRITISH J. EDUC. TECH. 619, 619 (2009).

¹⁰⁸ See generally *id.*; Edwin G. Aiken et al., *Memory for a Lecture: Effects of Notes, Lecture Rate, and Informational Density*, 67 J. EDUC. PSYCHOL. 439 (1975); Kenneth A. Kierwa et al., *Note-Taking Functions and Techniques*, 83 J. EDUC. PSYCHOL. 240 (1991).

¹⁰⁹ See Francis Di Vesta & Susan Gray, *Listening and Note Taking*, 63 J. EDUC. PSYCHOL. 8 (1972); Donald Peters, *Effects of Note Taking and Rate of Presentation on Short-Term Objective Test Performance*, 63 J. EDUC. PSYCHOL. 276 (1972).

¹¹⁰ See generally Makany et al., *supra* note 107, Peverly et al., *supra* note 106.

¹¹¹ See, e.g., Aiken et al., *supra* note 108.

¹¹² Compare Di Vesta & Gray, *supra* note 109, with Peters, *supra* note 109.

¹¹³ See, e.g., Kierwa et al., *supra* note 108, at 243–44 (discussing the potential pathways that may facilitate note taking while stating that future research is necessary).

¹¹⁴ Compare John R. Anderson, COGNITIVE PSYCHOLOGY AND ITS IMPLICATIONS 171–203 (Worth Publishers 6th Ed. 2005), with John F. Carter & Nicholas H. Van Matre, *Note Taking Versus Note Having*, 67 J. EDUC. PSYCHOL. 900, 900 (1975).

¹¹⁵ See generally Anderson, *supra* note 114.

¹¹⁶ See generally Carter & Van Matre, *supra* note 114.

¹¹⁷ *Id.*

hypothesis.¹¹⁸ Initially, experimental evidence conflicted.¹¹⁹ However, researchers harmonized these hypotheses into a comprehensive theory about note-taking, stating that (1) the act of reviewing notes is beneficial, and (2) note-taking also is beneficial independent of the review of those notes.¹²⁰

Under this framework, researchers focused on the types of information note-takers include in their notes and what types of information lead to better performance on examinations.¹²¹ Perhaps unsurprisingly, transcription fluency—the ability to quickly transcribe the details of a lecture—is linked to superior performance.¹²² More interestingly, educational psychologists have identified a “levels effect” in the way participants take notes.¹²³ The term “levels effect” refers to the tendency of students to emphasize the information that they consider to be important, in contrast to information that they do not, when taking notes or recalling a lecture.¹²⁴ In other words, students focus their attention on what they consider the “highest-level information” in a lecture.¹²⁵ Although seemingly obvious and uninteresting, this invites the following question relevant to jury decision-making: what do students consider “highly important information” when they take notes? Perhaps more importantly, what happens to students’ memories for information not deemed “highly important?” The experiment reported in this Article answers this question.

2. Jury Note-Taking

In recent years, scholars have reviewed the academic literature to determine whether the rigorous study of academic note-taking has spread to other fields where people take notes—including the legal context, counseling and medical situations, and occupational settings.¹²⁶ Studies of juror note-taking are the most prevalent, although the absolute num-

¹¹⁸ See Harold Faw & T. Gary Walker, *Mathemagenic Behaviours and Efficiency in Learning from Prose Materials: Review, Critique and Recommendations*, 46 REV. EDUC. RES. 691, 696 (1976).

¹¹⁹ Compare Richard Peper & Richard Meyer, *Note Taking as a Generative Activity*, 70 J. EDUC. PSYCHOL. 514 (1978), with Carter & Van Matre, *supra* note 114, and, Kierwa et al., *supra* note 108.

¹²⁰ Kenneth A. Kierwa, *Investigating Note-taking and Review: A Depth of Processing Alternative*, 20 EDUC. PSYCHOL. 23, 23, 26 (1985).

¹²¹ Peverly, *supra* note 106, at 167.

¹²² *Id.*

¹²³ Kenneth A. Kierwa et al., *Effects of Repetition on Recall and Note-Taking: Strategies for Learning from Lectures*, 83 J. EDUC. PSYCHOL. 120, 120 (1991).

¹²⁴ *Id.*

¹²⁵ *Id.*

¹²⁶ See James Hartley, *Notetaking in Non-Academic Settings: A Review*, 16 APPLIED COGNITIVE PSYCHOL. 559 (2002).

bers are thin and the results complex.¹²⁷ In sum, the literature reflects a positive but ambivalent stance regarding the efficacy of juror note-taking on such factors as recall, judgment, and satisfaction.

Studies of juror note-taking fall into two categories: field studies and laboratory studies. Field studies examine actual jurors as they decide actual legal disputes in court while laboratory studies observe the judgments and behavior of mock jurors who either watch or read a fictionalized version of a trial under controlled conditions.¹²⁸ Both methods have strengths and weaknesses. Field studies permit researchers to see how note-taking works in the real world. Field studies also have several drawbacks: trials vary in length, level of complexity, type of evidence, and subject matter.¹²⁹ These confounding variables can create a “clouded view” of the effects of note-taking on juror decision making.¹³⁰ Laboratory experiments control for these variables and allow researchers to make unambiguous statements about cause and effect.¹³¹ Commentators, including policy makers and legal practitioners, have criticized laboratory experiments because they lack verisimilitude and external validity; their results may not reflect what actually happens in real courtrooms.¹³² These limitations do not render field studies and laboratory experiments useless to policy makers. Rather, taken together, field studies and laboratory experiments provide convergent insight into the benefits and drawbacks of allowing jurors to take notes.

a) Field Studies

Early note-taking field studies focused on legal actors’ subjective experiences with jury note-taking instead of whether note-taking leads to verdicts that are more accurate. The first field study of juror note-taking occurred in 1980.¹³³ In this pilot study, experimenters observed the judgments of actual jurors serving on two civil trials and two criminal trials in DuPage County, Illinois.¹³⁴ In one civil trial and in one criminal

¹²⁷ As of 2011, there are just four field studies and six experimental studies on note taking. See discussion of studies *infra* Part II.B.2.a.

¹²⁸ Compare the methodologies in the field study reported at *infra*, note 132, with the laboratory studies reported at *infra*, note 164.

¹²⁹ David L. Rosenhan et al., *Note Taking Can Aid Juror Recall*, 18 LAW & HUM. BEHAV. 53, 54 (1994).

¹³⁰ *Id.*

¹³¹ See generally Lynne ForsterLee & Irwin & A. Horowitz, *The Effects of Jury-Aid Innovations on Juror Performance in Complex Civil Trials*, 86 JUDICATURE 185 (2003); see also Jennifer K. Robbenolt, *Apologies and Legal Settlement: An Empirical Examination*, 102 MICH. L. REV. 460, 483 (2003).

¹³² See, e.g., Larry Heuer & Steven Penrod, *Increasing Jurors’ Participation in Trials: A Field Experiment with Jury Notetaking and Question Asking*, 12 LAW & HUM. BEHAV. 231, 232 (1988).

¹³³ Flango, *supra* note 77.

¹³⁴ *Id.* at 439.

trial, jurors were allowed to take notes on the proceedings.¹³⁵ In the other civil and criminal trials, jurors were not permitted to take notes.¹³⁶ All participants later filled out questionnaires about their experiences and turned over their notes if they took them.¹³⁷ Jurors self-reported that they understood the case better when they took notes and that the availability of notes improved the quality of their deliberations.¹³⁸ The researchers did not collect objective data to verify these self-reported impressions, but they did note that at least half the jurors took more notes at the beginning of the trial than at the end.¹³⁹

A second field study, conducted five years later in selected federal district courts in New York, examined the attitudes of legal actors toward note-taking in thirty-two trials in which jurors took notes.¹⁴⁰ Like the first field study on note-taking, this study focused on the subjective assessments of note-taking procedures by legal actors including judges and attorneys.¹⁴¹ Consistent with the results found in the first field study, judges and jurors favored juror note-taking, while attorneys varied in their responses (with prosecutors and plaintiffs' counsel responding more favorably than defense counsel).¹⁴² In their subjective assessments, judges stated that note-taking jurors appeared to pay attention during trial, sometimes took substantial notes, and reported that their notes provided a useful memory aid.¹⁴³ Again, the study did not include objective measures of note-taking accuracy.

It took several years for researchers to collect more empirically rigorous field-study data on jury note-taking. In 1988, Larry Heuer and Steven Penrod designed a field study in which twenty-nine Wisconsin state judges randomly allowed or forbade juror note-taking in sixty-seven trials.¹⁴⁴ After finishing jury service, each juror completed self-report questionnaires along with factual multiple-choice questions about the trial in which he or she participated.¹⁴⁵

Interestingly, and in contrast to the subjective assessments reported in the earlier field studies, note-taking did *not* appear to aid jurors' mem-

¹³⁵ *Id.*

¹³⁶ *Id.*

¹³⁷ *Id.* at 439–40.

¹³⁸ *Id.* at 440.

¹³⁹ *Id.* at 442.

¹⁴⁰ See Sand & Reiss, *supra* note 75.

¹⁴¹ *Id.*

¹⁴² *Id.* at 445.

¹⁴³ *Id.* at 451.

¹⁴⁴ Heuer & Penrod, *supra* note 133. If judges thought that allowing jurors to take notes (or disallowing them from taking notes) in a particular trial would compromise the fairness of the trial, they could exclude that case from the study. *Id.* at 238–239.

¹⁴⁵ The researchers collected questionnaires from 550 jurors, 95 attorneys, and the 63 presiding judges. *Id.* at 242. Response rates were high, with 69% from jurors, 71% from attorneys, and 94% from judges. *Id.*

ories for trial content or jury instructions as compared to cases where jurors were not permitted to take notes during their trials.¹⁴⁶ Nor were note-taking jurors more confident in their verdicts.¹⁴⁷ In sum, there was no objective support for the proposed advantages of juror note-taking aside from jurors' (potential) self-perceived satisfaction.¹⁴⁸ Nonetheless, the field study provided no support for the proposed *disadvantages* of juror note-taking: judges presiding over these trials did not find juror note-taking to be distracting; note-taking jurors were not viewed by other jurors as possessing an unfair advantage during deliberations; jurors self-reported that their notes were a valuable resource to them during trial (and that these notes were not an unfair or inaccurate record of the proceedings); plaintiffs and prosecutors did not appear to be favored by note-takers simply because they presented their cases first at trial; and note-taking did not lengthen deliberations or result in acrimonious debate during those deliberations.¹⁴⁹

In search of a more representative sample and greater statistical power to detect any potential benefits conferred by note-taking, Heuer and Penrod expanded this field experiment six years later to include 103 trials from 33 different U.S. states.¹⁵⁰ The results of this expanded field experiment largely mirrored the results from Heuer and Penrod's prior work. Likewise, there was no evidence that note-taking served as a memory aid and, unlike in their prior experiment, note-taking did *not* increase juror satisfaction with the trial process.¹⁵¹ Further, note-taking did not appreciably affect verdicts: judge-jury agreement in trials where note-taking was allowed (68%) did not differ statistically from judge-jury agreement in trials where note taking was not allowed (69%).¹⁵² Nonetheless, as in Heuer and Penrod's prior work, the study did not support any of the proposed disadvantages of jury note-taking either.¹⁵³ In sum, these field experiments on jury note-taking produced inconclusive results. There was virtually no support for the proposed benefits of note-taking, yet there was no support for any of its potential harms either.

¹⁴⁶ *Id.* at 231.

¹⁴⁷ Note-taking jurors did report that they were more satisfied with the trial procedure and verdict, but this effect was only marginally significant. *Id.* at 246.

¹⁴⁸ *Id.*

¹⁴⁹ *Id.* at 246–51.

¹⁵⁰ Larry Heuer & Steven Penrod, *Juror Note-taking and Question Asking During Trials: A Natural Field Experiment*, LAW & HUM. BEHAV. 121 (1994). In this expanded field experiment, nearly nine in ten jurors who could take notes did so, an increase of 20% from their previous study. *Id.* at 135. Jurors, on average, took more notes as well, averaging 7.1 pages in criminal trials and 14.4 pages in longer civil trials (compared to 5.4 pages of notes overall in Heuer and Penrod's previous study). *Id.*; cf. Heuer & Penrod, *supra* note 132, at 244.

¹⁵¹ Heuer & Penrod, *supra* note 150, at 137–38.

¹⁵² *Id.* at 135.

¹⁵³ *Id.* at 137–40.

b) Laboratory Studies

Initially, the empirical evidence for jury note-taking did not fare much better under controlled laboratory experiments. The first laboratory experiment on jury note-taking, conducted in 1983 by psychologist Reid Hastie, found that note-taking actually interfered with mock jurors' ability to recall trial facts and inhibited their performance.¹⁵⁴ Hastie randomly assigned participants¹⁵⁵ into six-person mock juries, some of which were permitted to take notes and some of which were not.¹⁵⁶ All participants viewed a seventy-five-minute videotape of a simulated civil trial, and were, immediately afterwards, asked questions testing their recall of trial facts and comprehension of the case.¹⁵⁷ Surprisingly, jurors who took notes remembered *fewer* aspects of the judicial instructions¹⁵⁸ than did participants who relied on their memory alone.¹⁵⁹ Further, a significant number of participants in Hastie's experiment did not use notes to record important trial facts.¹⁶⁰ Instead, they doodled in their notebooks or wrote down "barely decipherable scribbings."¹⁶¹ Further, when they recorded inaccurate facts in their notes, other jurors were unlikely to correct them.¹⁶² Based on these results, Hastie concluded that jurors do not take notes well, use them effectively, or find the note-taking process helpful.¹⁶³

In the ensuing two decades, only five additional laboratory experiments examined jury note-taking.¹⁶⁴ However, those experiments became more methodologically sophisticated and provided evidence indicating that jury note-taking may have positive effects on legal deci-

¹⁵⁴ Heuer & Penrod, *supra* note 132 at 233–36.

¹⁵⁵ Study participants were jury-eligible citizens who had been called for jury duty at their local courthouse. *Id.* at 233 (citing Hastie).

¹⁵⁶ *Id.* (citing Hastie, *supra* note 154).

¹⁵⁷ *Id.* (citing Hastie).

¹⁵⁸ *Id.* (citing Hastie). This finding was marginally significant.

¹⁵⁹ There is a plausible explanation for this. Note-taking might cause participants to rely on their notes more (or to encode less information into long-term memory on the expectation that they could rely on their notes later). However, Hastie did not allow jurors to use their notes during the recall phase of his experiment. *See id.* (citing Hastie).

¹⁶⁰ *Id.* at 234 (citing Hastie).

¹⁶¹ *Id.* at 235 (citing Hastie).

¹⁶² *Id.* (citing Hastie).

¹⁶³ *Id.* at 226 (citing Hastie).

¹⁶⁴ Lynne ForsterLee et al., *Effects of Notetaking on Verdicts and Evidence Processing in a Civil Trial*, 18 L. & HUM. BEHAV. 567, 569 (1994); Lynne FosterLee & Irwin A. Horowitz, *Enhancing Juror Competence in a Complex Trial*, 11 APPLIED COGNITIVE PSYCHOL. 305 (1997); Irwin A. Horowitz & Kenneth S. Bordens, *The Effects of Jury Size, Evidence Complexity, and Note Taking on Jury Process and Performance in a Civil Trial*, 87 J. OF APPLIED PSYCHOL. 121 (2003); Irwin A. Horowitz & Lynne FosterLee, *The Effects of Notetaking and Trial Transcript Access on Mock Jury Decisions in a Complex Civil Trial*, 25 L. & HUM. BEHAV. 373 (2001); David L. Rosenhan et al., *supra* note 129.

sions.¹⁶⁵ In 1994, David Rosenhan and colleagues created the first laboratory experiment to examine jury note-taking since Hastie's study in 1983.¹⁶⁶ Rosenhan's results were mixed. Note-taking led to greater recall for facts but did not lead to more accuracy with respect to comprehension of trial facts.¹⁶⁷

That same year, Lynne ForsterLee and colleagues examined jury note-taking by playing a two-hour audio file of a complex toxic tort case. Participants were asked questions about the trial and decided the amount which four plaintiffs should be compensated.¹⁶⁸ Participants who took notes remembered more relevant trial information regardless of whether they reviewed those notes or not.¹⁶⁹ More importantly, liability and damages judgments differed based on the severity of each plaintiff's injury when jurors took notes, suggesting that note-takers made more accurate decisions than did participants who did not take notes.¹⁷⁰ This was the first jury study to report data that note-taking actually may lead to better jury decisions.

ForsterLee's study did not, however, explain the way in which note-taking improves decision-making accuracy. To investigate that, ForsterLee and psychologist Irwin Horowitz published a follow-up study three years later.¹⁷¹ The researchers generally replicated their prior findings: note-taking had an effect on decision making, but that effect was relatively weak.¹⁷² More interestingly, the researchers determined that note-taking increased recall for trial facts, and that recall correlated with more accurate decisions.¹⁷³

¹⁶⁵ See *supra* note 164.

¹⁶⁶ Rosenhan compared note-takers and non note-takers in a complex civil finance trial. Participants then completed a questionnaire about the trial. Rosenhan et al., *supra* note 129, at 53.

¹⁶⁷ *Id.* at 59.

¹⁶⁸ ForsterLee et al., *supra* note 164.

¹⁶⁹ *Id.* at 567. Participants either (1) took notes and used them while filling out the questionnaire, (2) took notes but did not use them to fill out the questionnaire, or (3) did not take notes. *Id.* at 571.

¹⁷⁰ *Id.* at 569. The assumption underlying the study is that rational triers of fact will apportion damages awards in accordance with the degree of injury sustained by a given plaintiff.

¹⁷¹ The study design was similar to their previous study, although ForsterLee and Horowitz also included an experimental variable that examined the role of pretrial and posttrial jury instructions on legal decision-making. ForsterLee & Horowitz, *supra* note 164.

¹⁷² *Id.* at 309–10.

¹⁷³ *Id.* at 316. Horowitz published two additional laboratory studies on jury note-taking, examining it in conjunction with access to trial transcripts, timing of jury instructions, and the size of the jury. See Horowitz & Bordens, *supra* note 164; Horowitz & ForsterLee, *supra* note 164. Horowitz found that note-taking led to better recognition of probative evidence than did access to trial transcripts, pretrial instructions increased the accuracy of note-taking jurors, and smaller juries benefit from note taking more than do larger juries.

In sum, there is an intriguing disconnect between the field studies and the laboratory studies.¹⁷⁴ Although the field studies find no support for the supposed disadvantages of juror note-taking, they do not find much support for any of its supposed advantages either.¹⁷⁵ In contrast, laboratory studies weakly support the contention that note-taking aids memory for trial facts, comprehension, and accuracy of decision-making.¹⁷⁶

These studies provide cautious support that note-taking is beneficial to juror decision-making or, at the least, that it is not harmful. This generally is consistent with the current, rosier judicial attitude toward note-taking, which leaves the practice to the discretion of trial judges.¹⁷⁷ But given what we now know about the role of contextual cues on decision making, particularly how framing effects can bias our judgments, it is possible that note-taking actually may bias our decisions in systematic ways.¹⁷⁸ There might be a real disadvantage to allowing jurors to take notes that has not yet been detected in the sparse empirical literature. For example, if the vividness of the trial evidence¹⁷⁹ can bias our judgments about a defendant's guilt or liability, might note-taking exacerbate our recall for that vivid evidence at the expense of other probative evidence? If so, allowing jurors to take notes may contribute to this vividness bias. Part III of this Article presents an experiment that tests this hypothesis.

III. AN EXPERIMENTAL STUDY: JURY NOTE-TAKING

Recall that local procedural rules are heterogeneous.¹⁸⁰ If any particular local procedural rule systematically biases legal decision making, this can create several issues. The transparency, accuracy, and equity of legal outcomes are called into question when similarly, or identically, situated parties enter different courtrooms and receive different judgments.¹⁸¹ Empirical legal scholars are particularly well suited to identify these rules and test their effects experimentally.

This experiment examines whether note-taking exacerbates framing effects with respect to the way evidence is presented at trial. The experiment will focus on the vividness bias, discussed briefly in Part I above,

¹⁷⁴ See discussion *supra* note 154; ForsterLee et al., *supra* note 164; ForsterLee & Horowitz, *supra* note 131; Horowitz & Bordens, *supra* note 164; Horowitz & ForsterLee, *supra* note 164; Rosenhan et al., *supra* note 131.

¹⁷⁵ Heuer & Penrod, *supra* note 132 at 233–36 (citing Hastie).

¹⁷⁶ FosterLee et al., *supra* note 164; ForsterLee & Horowitz, *supra* note 164; Horowitz & Bordens, *supra* note 164; Horowitz & ForsterLee, *supra* note 164; ROSENHAN ET AL., *supra* note 129.

¹⁷⁷ Horowitz & ForsterLee, *supra* note 164, at 375.

¹⁷⁸ See *supra* Part I.A.

¹⁷⁹ See *supra* notes 40–46 and accompanying text and *infra* Part III.

¹⁸⁰ See *supra* Part I.B.

¹⁸¹ *Id.*

which influences legal decision-making in the absence of note-taking.¹⁸² Before discussing the methodology and results, it is worth discussing vividness bias in detail and how it affects legal decision-making.

A. *The Vividness Bias*

In their classic text on social judgment, research psychologists Richard Nisbett and Lee Ross argued that people's judgments and behavior are heavily influenced by vivid, concrete information as compared to pallid and abstract information—even if the pallid and abstract information contains greater probative and evidential value.¹⁸³ Nisbett and Ross defined “vivid information” as information that is “likely to attract and hold our attention and to excite the imagination to the extent that it is (a) emotionally interesting, (b) concrete and imagery-provoking, and (c) proximate in a sensory, temporal, or spatial way.”¹⁸⁴ Emotionally interesting information is information with which we are familiar and that has “hedonic relevance” to us.¹⁸⁵ Concrete information is information that increases the “imaginability” of an event because it contains detail and specificity about the actors, actions, and situational context.¹⁸⁶ Temporal, spatial, and sensory proximity of information refers to how close an event or piece of information at issue is to a person in time and space.¹⁸⁷

Nisbett and Ross hypothesized that vivid information has greater potential to influence our judgments because human memory retains vivid information more easily.¹⁸⁸ They based this hypothesis on experimental studies that demonstrated that concrete words, such as the word “boat” in a word list, were better remembered than abstract concepts like the word “justice.”¹⁸⁹ They reasoned that vivid words, as compared to their pallid counterparts, are encoded in two distinct forms in our memories: verbal form and image form.¹⁹⁰ They postulated that this “dual encoding” leads to better retention and recall of vivid information.¹⁹¹

Further, greater retention and recall of vivid information also affects our social judgments through a mechanism called the availability heuristic. In their groundbreaking article on heuristics and biases, psycholo-

¹⁸² See *supra* notes 40–46 and accompanying text.

¹⁸³ NISBETT & ROSS, *supra* note 40, at 43–62; see also HANDBOOK OF SOCIAL COGNITION 440–41 (Robert S. Wyer, Jr. & Thomas K. Srull eds., 2d ed. 1994) (discussing how vivid information captures attention and encourages elaborative processing).

¹⁸⁴ NISBETT & ROSS, *supra* note 40, at 45.

¹⁸⁵ *Id.* at 46.

¹⁸⁶ *Id.* at 147.

¹⁸⁷ *Id.* at 49–51.

¹⁸⁸ *Id.* at 51.

¹⁸⁹ *Id.*; see also Allan Paivio, IMAGERY AND VERBAL PROCESSES 200–02 (Holt, Rinehart & Winston 1971).

¹⁹⁰ NISBETT & ROSS, *supra* note 40, at 51. See also Paivio, *supra* note 190, at 207–09.

¹⁹¹ NISBETT & ROSS, *supra* note 40, at 50–53.

gists Daniel Kahneman and Amos Tversky described a heuristic as a rule that “reduce[s] the complex task[]of assessing probabilities and predicting value[] to simpler judgmental operations.”¹⁹² According to Kahneman and Tversky, people judge the likelihood of some event according to the ease with which instances of that event come to mind.¹⁹³ People determine the likelihood of an event by its *availability* of recall in their memory.¹⁹⁴ This cognitive shortcut can be useful when events that are more frequent are also more memorable; however, this cognitive shortcut can become a bias when information that most easily comes to mind is influenced by irrelevant factors, including the salience or vividness of the information.¹⁹⁵

Under this framework, psychologists have spent the past three decades attempting to refine the contours of the vividness effect and identify the circumstances under which it affects social judgment. Based on Nisbett and Ross’s work, psychologists have constructed a working definition of the vividness effect as “the differentially persuasive impact that [vivid] information is thought to have on attitudes, relative to information that is presented in a more pallid and dull form.”¹⁹⁶ Vividness effect studies have fallen into two camps: (1) studies that vary the vividness of the *mode* in which evidence is presented, such as varying whether a message is read, heard, or seen through pictures or video;¹⁹⁷ and, (2) studies that vary the vividness of the message *itself* by manipulating qualities of the message, such as the concreteness of its language.¹⁹⁸

¹⁹² See Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, 185 SCIENCE 1124 (1974). See also Jonathan Shedler & Melvin Manis, *Can The Availability Heuristic Explain Vividness Effects?*, 51 J. PERSONALITY & SOCIAL PSYCH. 26 (1986). Scholars of heuristics analogize the mind to an information processor with a limited capacity. Thus, the mind looks for ways to conserve its cognitive resources, often through the use of these mental shortcuts.

¹⁹³ Tversky & Kahneman, *supra* note 193, at 1127.

¹⁹⁴ As other psychologists have explained: “This rule of thumb is a heuristic [because] it shortcuts the lengthier procedure of exhaustively recalling a large sample of events and then calculating [probabilities].” Reyes et al., *supra* note 42, at 2.

¹⁹⁵ A famous experiment will make this abstract concept more concrete. Psychologist Paul Slovic and colleagues researched mortality statistics available from the National Center for Health Statistics. Slovic noticed that the mortality rate of so-called “silent killers” like heart disease and cancer was considerably higher than the mortality rate of more highly publicized causes of death, including car accidents, fires, and homicides. Slovic then set up an experiment where he paired silent killers with the highly publicized killers. He then asked research participants to decide which killer was a more likely cause of death. Consistent with the availability heuristic, participants judged the highly publicized, more vivid causes of death to be significantly more likely to occur than the less vivid silent killers like heart disease and cancer. See Sarah Lichtenstein et al., *supra* note 41.

¹⁹⁶ Shelley E. Taylor & Joanne V. Wood, *The Vividness Effect: Making a Mountain Out of a Molehill?*, 10 ADV. IN CONSUMER RESEARCH 540, 540 (1983).

¹⁹⁷ See *infra* Part III.A.1.a.

¹⁹⁸ See *infra* Part III.A.1.b.

Because there are different ways to define and manipulate “vividness,” the vividness effect suffers from problems with construct validity.¹⁹⁹ It should not be surprising that experiments examining the ubiquity of the vividness effect on social preferences have produced mixed results.²⁰⁰ Nonetheless, three general patterns emerge. First, vivid information affects memory; specifically, several experiments demonstrate that vivid information is better recalled than pallid information.²⁰¹ Second, differentially recalled vivid information affects social judgment.²⁰² Third, the vividness effect is most pronounced when vivid information competes with more pallid information for our attention. When we confront situations in which we must split our attention between vivid and pallid information, the vivid information is likely to drown out the pallid (but potentially quite probative) information and will affect our judgments.²⁰³

¹⁹⁹ Construct validity refers to the fit between a conceptual definition (here, vividness bias) and the way the variables designed to test it in an experiment are operationalized. See generally Shelley E. Taylor and Suzanne C. Thompson, *Stalking the Elusive “Vividness” Effect*, 89 PSYCHOL. REV. 155 (1982).

²⁰⁰ Compare William C. Miller, *Film Movement and Affective Response and the Effect on Learning and Attitude Formation*, 17 AV COMM. REV. 172 (1969) (finding no effects), with David L. Nasser & William J. McEwen, *The Impact of Alternative Media Channels: Recall and Involvement with Messages*, 24 AV COMM. REV. 263 (1976) (finding effects). For a comprehensive review of this literature, see Taylor & Thompson, *supra* note 200.

²⁰¹ For example, Kahneman and Tversky had participants read a list of male and female names and asked participants to estimate the proportion of men and women on the list. Some participants read a list with very famous female names (for example, Elizabeth Taylor) and regular male names; other participants read a list with famous male names (for example, Richard Nixon) and ordinary female names. Participants overestimated the proportion of whichever sex contained the names of famous people on the list and remembered more of those names than they did the ordinary names. See Denise R. Beike & Steven J. Sherman, *Social Inference: Inductions, Deductions, and Alaogies*, in HANDBOOK OF SOCIAL COGNITION 209, 214 (Robert S. Wyer, Jr. & Thomas K. Srull eds., 2d ed. 1984).

²⁰² For example, in an experiment by psychologist Paul Herr and colleagues, participants were either given an in-person, word-of-mouth review of a new computer system, or they were asked to read that same review in the form of a *Consumer Reports* excerpt about the computer. Participants remembered more of the information when it was presented to them by a human being and their attitudes toward the computer more closely matched the attitude of the in-person reviewer than the attitude expressed in the magazine excerpt. Paul M. Herr et al., *Effects of Word-of-Mouth and Product-Attribute Information on Persuasion: An Accessibility-Diagnosticity Perspective*, 17 J. CONSUMER RES. 454 (1991). However, empirical studies of the relationship between memory and judgment have yielded complex results that have been contradictory at times. See Reid Hastie & Bernadette Park, *The Relationship Between Memory and Judgment Depends on Whether the Judgment Task is Memory-Based or On-Line*, 93 PSYCHOL. REV. 258 (1986).

²⁰³ As explained by psychologists Shelley Taylor and Joanne Wood, when riding the subway, one may listen to music, catch the headlines of a newspaper, or glance at a magazine, all simultaneously. Taylor & Wood, *supra* note 198, at 541.

1. Applications to the Courtroom

If we think of legal judgments as social judgments reached under conditions of uncertainty—for example, as the probability that a defendant has committed some crime given a certain set of facts—heuristics generally, particularly the vividness effect and the availability bias, become highly relevant.²⁰⁴ Vivid information frequently is presented to juries in court. For example, parties routinely use demonstrative evidence, including computer-generated accident reconstructions and gruesome crime scene photographs, as testimonial aids in jury trials.²⁰⁵ Less obviously, adversarial characterizations of the evidence by trial counsel during questioning of witnesses and during summations also present vivid information to jurors.²⁰⁶ If vividly presented evidence has the potential to bias decision makers, this should interest legal policy makers. Although experimental tests of vividness effects on jurors are relatively rare, a few psychologists have examined (1) the potential effects of gruesome demonstrative evidence²⁰⁷ and (2) the effects of vivid language on juror verdicts.²⁰⁸ These very different experiments converge on the same conclusion: that vividly presented evidence has the potential to bias jurors.

a) Mode Vividness

In the 1990s, psychologists examined whether manipulating the vividness of the mode in which evidence is presented at trial would affect mock jurors' legal judgments; these experiments focused particularly on the effect of gruesome crime scene photographs and videos on jurors.²⁰⁹

²⁰⁴ See Roger C. Park & Michael J. Saks, *Evidence Scholarship Reconsidered: Results of the Interdisciplinary Turn*, 47 B.C. L. REV. 949, 957 (2006) (stating that research on “decisions under conditions of uncertainty[] and jury behavior are plainly relevant to evidence law”).

²⁰⁵ See Gordon Bermant, *Courting the Virtual: Federal Courts in an Age of Complete Inter-Connectedness*, 25 OHIO N.U. L. REV. 527 (1999); Fred Galves, *Where the Not-So-Wild Things Are: Computers in the Courtroom, The Federal Rules of Evidence, and the Need for Institutional Reform and More Judicial Acceptance*, 13 HARV. J.L. & TECH. 161, 165 (2000); Richard K. Sherwin et al., *Law in the Digital Age: How Visual Communication Technologies are Transforming the Practice, Theory, and Teaching of Law*, 12 B.U. J. SCI. & TECH. L. 227, 233 (2006).

²⁰⁶ See Thomas A. Mauet, TRIAL TECHNIQUES 13–29 (6th Ed. 2002) (discussing the “psychology of persuasion” useful to an advocate arguing a case before a jury).

²⁰⁷ See *infra* Part III.A.1.a.

²⁰⁸ See *infra* Part III.A.1.b.

²⁰⁹ See, e.g., Kevin S. Douglas et al., *The Impact of Graphic Photographic Evidence on Mock Jurors' Decisions in a Murder Trial: Probative or Prejudicial?*, 21 LAW & HUM. BEHAV. 485 (1997); Saul M. Kassir & David A. Garfield, *Blood and Guts: General and Trial-Specific Effects of Videotaped Crime Scenes on Mock Jurors*, 21 J. APPLIED SOC. PSYCHOL. 1459, 1466–69 (1991); see also Vicki L. Fishfader, et al., *Evidential and Extralegal Factors in Juror Decisions: Presentation Mode, Retention and Level of Emotionality*, 20 L. & HUM.

Subject to a few caveats,²¹⁰ the researchers found that vividly presented evidence of a crime scene affected jurors' judgments. Particularly, research participants who read a criminal trial summary accompanied by a gruesome crime scene videotape lowered the burden of proof necessary for them to convict the defendant from a "beyond a reasonable doubt" standard to one akin to the "clear and convincing" standard. Seeing a gruesome crime scene video made it easier for these mock jurors to convict the defendant as compared to mock jurors who had not viewed the gruesome video.²¹¹

This effect is not limited to videotapes. Vivid photographs can affect mock juror judgments. In a similar experiment, psychologist Kevin Douglas and colleagues had mock jurors read a murder case while viewing photographs.²¹² Some participants viewed gruesome photographs of the victim while others only viewed photographs of the victim's apartment.²¹³ The experimenters found that participants who viewed the vivid photographs were significantly more likely to find the defendant guilty but rated themselves just as fair and unbiased as their counterparts who had not seen the vivid photographs.²¹⁴ Interestingly, this study supports the view that the effects of the vividness bias occur outside conscious awareness.

These results, which manipulate the vividness of the *mode* in which evidence is presented to mock jurors, dovetail nicely with results from other vividness studies, which manipulate the vividness of the message *itself* that is presented to mock jurors. These studies are particularly interesting because their effects are not obvious and the manipulations are more subtle.²¹⁵

BEHAV. 565 (1996) (examining whether video scene re-creations affect juror decisions by evaluating retention for facts, emotional state, liability assessments, and damages awards).

²¹⁰ See, e.g., Fishfader et al., *supra* note 210, at 570 (finding that, in this particular study, vivid information affected liability judgments but not damages awards).

²¹¹ In their study, psychologists Saul Kassin and David Garfield had participants read a murder transcript that was either accompanied by a gruesome videotape of the murder victim or was not accompanied by a video tape. Participants were asked, among other things, to decide whether the defendant was guilty of the murder and were asked to fill in the blank portion of the following statement: "[T]he defendant should be found guilty if there is at least a ___% chance that he committed the crime." Interestingly, the researchers found that participants who watched the videotape filled in the blank with an average of 76.56%—akin to the percentage associated with a "clear and convincing" standard of proof—while participants who did not view the videotape filled in the blank with an average of 92.99%, akin to the percentage associated with the "beyond a reasonable doubt" standard. Kassin & Garfield, *supra* note 210, at 1466–69. In other words, those who had seen the vivid, gruesome videotape lowered their standards for convicting the defendant.

²¹² Douglas et al., *supra* note 210, at 485.

²¹³ *Id.* at 490.

²¹⁴ *Id.* at 499.

²¹⁵ The present experiment discussed in *infra* Part III employs this methodology.

b) Message Vividness

Researchers Brad Bell and Elizabeth Loftus provide a concise explanation of how studies that manipulate the vividness of trial testimony are conducted. Most importantly, the vivid version of the testimony must contain the same probative value as the ordinary or pallid version of the testimony.²¹⁶ Bell and Loftus discuss several ways in which that is accomplished. First, a pallid description of some object can be replaced in whole or in part by a more concrete description. For example, the statement “The robber grabbed the money and a six-pack of soda” can be replaced with “The Robber grabbed the money and a six-pack of Coca-Cola.”²¹⁷ Similarly, more vivid information can be added without altering any of the components of the pallid statement. For example, “Paul was wearing blue jeans and a white T-shirt” can be attached to the statement “Paul was running across the street when he was struck by the truck.”²¹⁸ Further, totally irrelevant details can be added to the testimony, such as what an eyewitness had for dinner on the night of the crime.²¹⁹

Under this framework, four experiments have been conducted to determine whether vividly presented evidence actually affects mock trial outcomes. Psychologists Robert Reyes, William Thompson, and Gordon Bower conducted an important experiment on the effects of verbally presented evidence on juror judgments.²²⁰ Reyes and his colleagues had research participants read a drunk-driving case where the defendant had collided with another vehicle.²²¹ The researchers created two versions of the prosecution’s evidence and two versions of the defense’s evidence: vivid and pallid.²²² To ensure that vivid information competed with pallid information for mock jurors’ attention, each trial scenario featured a vivid version of one party’s evidence and a pallid version of the other party’s evidence.²²³ Participants rated the likelihood of the defendant’s guilt immediately after reading the evidence.²²⁴ Forty-eight hours later, participants rated the defendant’s guilt again and were asked to recall as much of the trial’s evidence as they could remember.²²⁵

²¹⁶ See Brad E. Bell & Elizabeth F. Loftus, *Vivid Persuasion in the Courtroom*, 49 J. PERSONALITY ASSESSMENT 659, 659 (1985).

²¹⁷ *Id.*

²¹⁸ *Id.*

²¹⁹ *Id.*

²²⁰ Reyes, et al., *supra* note 42.

²²¹ *Id.* at 4.

²²² See *id.*

²²³ *Id.* at 4.

²²⁴ *Id.* at 4–5.

²²⁵ *Id.*

The experiment provided powerful support for the vividness bias.²²⁶ First, vivid evidence affected participants' memories of the case's facts.²²⁷ Specifically, participants remembered the vivid evidence better than the pallid evidence.²²⁸ Moreover, after forty-eight hours, participants provided more extreme judgments of the defendant's drunkenness if the prosecution presented vivid evidence because participants relied more on their memory.²²⁹ This was true even though the probative value of the evidence had not changed.²³⁰

Wilson and her colleagues created a civil trial scenario and manipulated the evidence's vividness in the same manner as did Reyes;²³¹ they similarly found that vividness affected judgments.²³² They also manipulated whether participants received a significant volume of information during the trial—which would cause differential attention by mock jurors—or a lower volume of information.²³³ Unlike the Reyes experiment, Wilson and her colleagues demonstrated that vividness also can affect subjects' immediate judgments when subjects are presented with a high volume of information.²³⁴

Bensi and his colleagues extended this research by showing that the vividness bias can affect a juror's judgment of specific elements of a party's case, not just the juror's judgment of the defendant's guilt or civil liability.²³⁵ The researchers presented students with a mock transcript of a trial and asked only whether the defendant shot the victim intentionally.²³⁶ The researchers manipulated the vividness of the defense testimony by highlighting irrelevant facts and thus making them more salient in the testimony presented.²³⁷ When the prosecution presented its evidence in pallid form, a majority of participants judged the defendant's conduct as unintentional.²³⁸ But when the prosecution presented its evi-

²²⁶ *Id.* at 8.

²²⁷ *Id.* at 5.

²²⁸ *Id.* at 7.

²²⁹ *Id.* at 6. The direction of the valence depended on which "type" of vivid evidence the participants read (i.e., vivid prosecution evidence or vivid defense evidence).

²³⁰ *Id.* at 4; *see also* Shedler & Manis, *supra* note 193 (replicating Reyes et al.'s results, although Shedler and Manis' results suggested a different cognitive pathway that mediated the results).

²³¹ Marie G. Wilson et al., *Information Competition and Vividness Effects in On-Line Judgments*, 44 ORGANIZATIONAL, BEHAV. & HUM. DECISION PROCESSES 132, 135 (1989). For example, researchers described a piece of concrete as having "a network of cracks" or a "spiderweb of cracks." *Id.*

²³² *Id.*

²³³ *Id.*

²³⁴ *Id.* at 136–37.

²³⁵ L. Bensi, et al., *Vividness in Judgements of Guilt*, 97 PERCEPTUAL & MOTOR SKILLS 1133 (2003).

²³⁶ *Id.*

²³⁷ *Id.*

²³⁸ *Id.* at 1135.

dence vividly, half the participants judged the defendant's actions as intentional.²³⁹

Finally, Bell and Loftus examined whether vividness also influences mock jurors' perceptions of individual witnesses.²⁴⁰ In two separate experiments, Bell and Loftus examined whether testifying to many vivid but trivial details makes the testimony of a witness appear more credible.²⁴¹ In both civil and criminal trials, Bell and Loftus pitted two eye-witnesses against each other, each giving conflicting accounts of the event.²⁴² Some eyewitnesses testified to several irrelevant but vivid details about the event while others simply identified the perpetrator without discussing those details.²⁴³ Consistent with Bell and Loftus's hypothesis, participants deemed witnesses who testified to a greater number of vivid details, however trivial, more credible and persuasive.²⁴⁴

B. *Experimental Methodology*

Currently, no studies examine the interaction between procedural rules and cognitive biases. Thus, no empirical study has examined what substantive effects, if any, juror note-taking at trial may have on the vividness bias. This Part describes an original experimental study designed to examine that issue. This experiment tests whether juror note-taking alleviates or exacerbates the vividness bias.

Controlled experiments provide the best method for studying how jury note-taking interacts with the vividness bias.²⁴⁵ In a controlled experiment, all individuals evaluate the same case.²⁴⁶ Researchers are able to manipulate certain aspects of that case, while holding all other variables constant, and evaluate how subjects respond to the manipulation.²⁴⁷ If subjects respond differently, then one confidently may infer that the manipulation caused the subjects to respond as they did.²⁴⁸ Conversely,

²³⁹ *Id.*

²⁴⁰ Bell and Loftus called this "trivial persuasion." Brad E. Bell & Elizabeth F. Loftus, *Trivial Persuasion in the Courtroom: The Power of (a Few) Minor Details*, 56 J. PERSONALITY & SOC. PSYCHOL. 669 (1989); Brad E. Bell & Elizabeth F. Loftus, *Degree of Detail of Eyewitness Testimony and Mock Juror Judgments*, 18 J. APPLIED SOC. PSYCHOL. 1171 (1988) (defining trivial persuasion as the effect of trivial details on persuasion).

²⁴¹ Bell & Loftus, *supra* note 241, at 1173.

²⁴² *Id.* at 1175, 1182.

²⁴³ *Id.*

²⁴⁴ *Id.* at 1190.

²⁴⁵ See Robbennolt, *supra* note 131, at 482–83 (describing the benefits of experimental simulation methods).

²⁴⁶ Robbennolt, *supra* note 131, at 482.

²⁴⁷ *Cf., e.g.,* Robbennolt, *supra* note 131, at 482–83 (describing the experimental simulation process).

²⁴⁸ Robbennolt, *supra* note 131, at 483.

naturalistic studies of jury behavior generally do not allow researchers to make causal inferences the way that experimental studies do.²⁴⁹

In this experimental study, participants were asked to act as a mock juror in a drunk driving case where a defendant was accused of leaving a holiday party, drunkenly running a stop sign on the way home, and colliding with a cement truck. Because the defendant was not given a blood alcohol test at the time of his arrest, the evidence against him at trial largely consisted of the testimony of several party guests. His defense case largely consisted of the testimony of party guests as well.

Participants read one of three versions of the case: one in which the prosecution's evidence was presented in a vivid way, one in which the defendant's evidence was presented in a vivid way, or one in which neither the prosecutor nor the defense presented evidence in a vivid way. Participants were either allowed or forbidden to take notes about the trial. Participants also filled out a questionnaire about the trial, rating the likelihood of the defendant's guilt on a 1–7 Likert scale,²⁵⁰ with 1 representing a judgment that the defendant was not drunk and 7 representing a judgment that the defendant was drunk. Participants also rated the persuasiveness of the evidence and then recalled as much of the evidence as they could. Half the experimental participants filled out this questionnaire immediately after reading the scenario while others filled out the questionnaire forty-eight hours later.²⁵¹

1. Rationale and Hypotheses

In sum, this experiment consists of three different independent variables: (1) the vividness of the evidence, (2) whether the participants could take notes, and (3) the length of time before participants rated the defendant's drunkenness and recalled the evidence they had read.

²⁴⁹ In sum, the difference between naturalistic studies and experimental studies involves a trade-off between better control and generalizability. Robbenolt, *supra* note 131, at 483 n.108.

²⁵⁰ A Likert Scale is a psychometric scale commonly used in questionnaires to capture data from ordinal variables (from 1 to 7). ROBERT M. LAWLESS ET AL., *EMPIRICAL METHODS IN LAW* 172 (2010). Likert Scales are used frequently to collect data from mock jurors, although scholars have noted the limitations of this method. See, e.g., Gerald Albaum, *The Likert Scale Revisited: An Alternate Version*, 39 J. MARKET RES. SOC'Y 331, 332 (1997) ("The standard Likert scale tends to confound the direction and intensity dimensions of attitude so there may be an under-reporting of the most intense agreement or disagreement (i.e. the extreme position of the scale).").

²⁵¹ In psychological parlance, this is a 3 (vividness) x 2 (note-taking) x 2 (time) design. See LAWLESS ET AL., *supra* note 251, at 99–100 (describing the use of factorial designs when dealing with at least two levels of variables).

a) Vividness

As discussed earlier, the vividness of a given message can be manipulated in two general ways: (1) by changing the medium through which that message is seen or heard; or (2) by manipulating certain features of the message itself such as its emotionality, concreteness, and ability to evoke imagery.²⁵² This experiment manipulated features of the messages as these effects are more subtle and potentially more interesting and pervasive.²⁵³

Each drunk driving trial contained seven evidentiary ideas that favored the prosecution (implying that the defendant was drunk), and seven evidentiary ideas that favored the defendant (implying that the defendant was not drunk). Control participants read these fourteen evidentiary ideas in their pallid, ordinary form.

Other participants read either a vivid version of either the prosecutor's evidence or the defendant's evidence. Vividness was manipulated by varying several aspects of the evidence without altering its probative value.²⁵⁴ As Tables 1 and 2 demonstrate, employing action verbs, visual cues, sense-based language, irrelevant and expansive descriptors, and personalized and affective descriptors made evidence more vivid. Importantly, all vividness manipulations were designed to make irrelevant aspects of the evidence more vivid. As a precaution, additional measures were taken to ensure that increasing the vividness of the evidence did not increase its probative value.²⁵⁵

Table 1 showcases the prosecution's evidence in both ordinary and vivid form. An example of an ordinary version of the prosecution's evidence is the statement: "On the way out the door, the defendant knocked against a serving table, knocking a salsa bowl to the floor." The vivid version of this evidence adds color imagery and more colorful action verbs to that same evidentiary statement: "On his way out the door, the defendant *staggered* against a serving table, knocking over a bowl of salsa which *splattered* all over the *white* carpet."

Similarly, Table 2 showcases the defendant's ordinary and vivid evidence. An ordinary version of the defense's evidence read: "The cement truck owner admitted under cross-examination that his truck is difficult to see at night because it is gray in color." The vivid version of this evidence included an irrelevant but memorable exchange between the

²⁵² See *supra* Part III.A.

²⁵³ Cf. Reyes et al., *supra* note 42, at 4 (employing "relatively slight" vividness manipulation to avoid conflating argument availability with probative value).

²⁵⁴ See generally *id.*

²⁵⁵ See *infra* notes 269–272 and accompanying text. Pretesting was performed to ensure the manipulations worked as expected and the probative value of the vivid and pallid evidence was the same. See *infra* Section III.C for a complete discussion.

truck driver and the cross-examining defense attorney: “The owner said his trucks might be difficult to see at night because they are gray, which ‘*hides the dirt,*’ and then said, ‘*What—should they be pink?*’”

Participants whose trial scenario included vivid prosecution evidence also included ordinary defense evidence and vice versa. It was expected that, absent procedures to combat the vividness bias, participants’ judgments of the defendant’s guilt would be affected by whether their trial scenario contained vivid prosecution or vivid defense evidence:²⁵⁶ participants exposed to vivid prosecution evidence would judge the defendant to be drunker than would participants exposed to vivid defense evidence (despite the fact that no legally relevant additional information was provided in the vivid scenario).

²⁵⁶ Cf. Reyes et al., *supra* note 42, at 3 (“[T]he more vivid arguments should be more available for recall and hence they should dominate the nonvivid counterarguments in determining guilt judgment.”).

TABLE 1: Prosecution's Evidence

Ordinary Form	Vivid Form
<p>On the way out the door, the defendant knocked against a serving table, knocking a salsa bowl to the floor.</p>	<p>On his way out the door, the defendant staggered against a serving table, knocking over a bowl of salsa which splattered all over the white carpet.</p>
<p>A coworker noticed that early in the evening, the defendant loudly and enthusiastically asked for a strong drink from the bartender.</p>	<p>At seven p.m., a coworker noticed the defendant shout, "Make it a double!" to the bartender, and then remark, "Let's get this party started!"</p>
<p>A coworker noted that the defendant, who knew her well, kept calling her by the wrong name as the night wore on.</p>	<p>As the night wore on, the defendant repeatedly began referring to a coworker, whom the defendant had known for years, as "Brenda" instead of "Linda."</p>
<p>The defendant performed a well-known karaoke song that night and could not remember some of the words.</p>	<p>The defendant performed Journey's <i>Don't Stop Believin'</i> on karaoke that night, but could not remember the refrain.</p>
<p>The defendant became louder as the night progressed, even when talking to other partygoers to whom the defendant was standing closely.</p>	<p>The defendant became louder as the night progressed, and partygoers conversing with the defendant had to lean away because of the defendant's volume.</p>
<p>The stop sign at the intersection where the accident occurred was clearly visible from the road.</p>	<p>The stop sign at the intersection where the accident occurred had a reflective coating, making it clearly visible from the road.</p>
<p>The defendant had trouble putting the key into the lock on the car door, which the defendant accidentally scratched.</p>	<p>The defendant kept missing the lock on his car door when trying to put the key in the lock. Only after putting a two-inch scratch in the door did the defendant succeed.</p>

TABLE 2: Defense's Evidence

Ordinary Form	Vivid Form
The cement truck owner admitted under cross-examination that his truck is difficult to see at night because it is gray in color.	The cement truck owner said his trucks might be difficult to see at night because they are gray, which "hides the dirt," and then said, "What? Should they be pink?"
Early on in the evening, coworkers noticed that the defendant had stopped drinking.	After eight p.m., coworkers had noticed the defendant's hand conspicuously without a drink, which led to chiding from coworkers that the defendant was a teetotaler.
The defendant is known to be gregarious by nature, even when not drinking.	The defendant is a naturally loud and gregarious person, often known as the life of the party when not drinking.
Because of a storm the night before, a tree branch was partially obstructing the view of the intersection's stop signs from the road.	After a bad lightning storm the night before, a branch split from a tree and partially obstructed the view of the intersection's stop signs from the road.
The cement truck had been speeding slightly as it approached the intersection. The defendant was not speeding.	The cement truck had been traveling seven miles per hour above the speed limit as it approached the intersection. The defendant had been traveling at two miles per hour below the speed limit.
The defendant won a limbo competition that night which required agility and concentration.	The defendant defeated his office-mates in a limbo competition that night by carefully and methodically getting underneath the bar without touching it.
The defendant was seen repeatedly rejecting drinks his boss had offered to him.	The defendant refused to drink shots of whisky with his boss despite the boss's repeated requests.

b) Note Taking

In addition to reading either vivid prosecution evidence, vivid defense evidence, or ordinary versions of both, participants were split into two groups: those permitted to take notes and those who were not. Note-taking jurors were provided a blank 8.5-inch by 11-inch sheet of paper to write down anything they thought would help them evaluate the defendant's guilt. Based on prior note-taking research, it was expected that

participants who took notes would record what they deemed to be the “most important” pieces of evidence from the trial.²⁵⁷ It was further hypothesized that jurors would deem the vivid evidence more important than ordinary evidence. Thus, it was expected that jurors disproportionately would record vivid evidence in their notes at the expense of probative, but ordinary, evidence.

c) Time Delay

Half of all study participants were asked to judge the defendant’s guilt and recall the prosecution and defense evidence immediately after reading the trial summary. The other participants judged the defendant’s guilt and recalled the trial evidence forty-eight hours after reading the trial scenario. It was hypothesized that on return, study participants would better remember the vivid information (as opposed to the pallid information), and this differential recall would influence their verdicts of the defendant’s guilt. Thus, the vividness bias would be exacerbated by the passage of time; participants who read vivid prosecution evidence and waited forty-eight hours to make their guilt judgments would judge the defendant as significantly drunker than those who read vivid defense evidence.²⁵⁸

In sum, the hypotheses for this experimental study are as follows:

- (1) Vivid evidence will bias mock jurors in the direction of the vivid evidence, and thus toward the party who puts forth the vivid evidence—whether that is the prosecutor or defendant.
- (2) The vividness bias will influence judgments because mock jurors will remember vivid information better than ordinary information; thus, the vividness bias will be most evident when participants wait forty-eight hours to judge the defendant’s drunkenness.
- (3) Most importantly, mock jurors’ ability to take notes will not alleviate this bias; rather, note-taking jurors likely will take notes on the most vivid evidence, exacerbating the vividness bias. Thus, note-taking jurors exposed to vivid evidence and a time delay before rendering their judgments will be most affected by the vividness bias.

²⁵⁷ Kiewra et al., *supra* note 123, at 120.

²⁵⁸ Similarly, those who read vivid defense evidence and waited forty-eight hours to make their guilt judgments would judge the defendant as significantly less drunk than would those participants who read vivid prosecution evidence.

C. Results

The experimental results supported each of the above hypotheses.²⁵⁹ In sum, the experimental results revealed a statistically significant main effect of the vividness of the evidence;²⁶⁰ a statistically significant interaction between vividly presented evidence and jurors' use of notes;²⁶¹ a statistically significant interaction between vividly presented evidence and the passage of time;²⁶² and a statistically significant interaction among vividly presented evidence, jurors' use of notes, and the passage of time.²⁶³ Put simply, vividly presented information biased mock jurors in favor of the party that presented the vivid evidence.²⁶⁴ Further, this effect was magnified when mock jurors were allowed to take notes while reading the trial scenario and when jurors waited forty-eight hours to render their verdicts.²⁶⁵ These results are explained in more detail below. The first set of analyses and Table 3 compare the questionnaire responses from non note-takers only. The second set of analyses and Table 4 compare the questionnaire responses from note-takers. Table 5 then compares the responses from note-takers and non note-takers.²⁶⁶

At the outset, several manipulation checks were performed to ensure the experiment accurately manipulated the vividness of the evidence. In pretests,²⁶⁷ participants judged the vivid versions of the evidence as more concrete and imagery-provoking.²⁶⁸ These findings assure us that the more vivid descriptions of the evidence were, in fact, perceived by mock

²⁵⁹ Data were analyzed using (1) a three-way analysis of variance (ANOVA), which provides a statistical test of whether the means of several groups are equal, and (2) unpaired t-tests and post-hoc Tukey-Kramer tests for detecting true differences in sample means. ANOVA results are represented by an F-statistic, and t-tests are represented by a t-statistic. See generally LAWLESS ET AL., *supra* note 251, at 277–84 (explaining the ANOVA analysis). All means are denoted by the abbreviation “M,” and all standard deviations are denoted by the abbreviation “SD.”

Differences are denoted as statistically significant in this Article if “the statistical test used indicates that the likelihood that the difference would occur by chance is less than 5% (reported by the p-value as $p < 0.05$).” A difference is marginally significant if “the likelihood of such a difference occurring by chance is greater than 5% but less than 10%.” Robbennolt, *supra* note 131, at 485 n.117 (citing BARBARA G. TABACHNICK & LINDA S. FIDELL, *USING MULTIVARIATE STATISTICS* (2d ed. 1989)).

²⁶⁰ $F(2, 60) = 36.98, p < .001$.

²⁶¹ $F(2, 60) = 6.26, p = .003$.

²⁶² $F(2, 60) = 25.82, p < .001$.

²⁶³ $F(2, 60) = 5.72, p = .005$.

²⁶⁴ See *infra* Tables 3 & 4 and accompanying text.

²⁶⁵ See *infra* Table 5 and accompanying text.

²⁶⁶ As noted earlier, the experiment reported in this Article contains a 3 (vividness) x 2 (note-taking) x 2 (time) between-subjects factorial design, which creates twelve different subgroups of experimental participants. For simplicity, experimental results are displayed in a series of 3 x 2 charts and graphs. See *infra* Tables 3, 4, and 5.

²⁶⁷ The responses from these pretest participants were not included in the analysis below for the main experiment.

²⁶⁸ All t-statistics were greater than 2.0 and all p-values were less than 0.05.

jurors as more vivid during the experiment. More importantly, pretest participants rated the probative values of the vivid and pallid versions of each evidentiary idea as statistically equal.²⁶⁹ This manipulation check eliminates the probative value of the evidence as a confounding variable; this increases confidence that any differences in mock juror judgments of the defendant's guilt are due to vividness, note-taking, and time lapse—not probative value.²⁷⁰

I now turn to the results of the main experiment. The first set of analyses compares the responses of non note-takers who filled out the questionnaire immediately after reading the trial scenario with those who filled it out forty-eight hours later.

In sum, the results, which appear in Table 3, replicate those of the Reyes study.²⁷¹ As expected, there was no vividness effect in any of the experimental conditions when participants rated the defendant's drunkenness and recalled trial facts immediately after they read the trial scenario.²⁷² This is not surprising. Consistent with Nisbett and Ross's hypothesis and with Reyes and his colleagues' experimental data, the vividness effect is a product of differential recall of vivid information in memory. When participants immediately gave their guilt judgments and immediately recalled trial information, they did not need to rely as heavily on their memories.

TABLE 3: Judgments of Non Note-Takers

	Drunkenness Ratings	
	Immediate Judgment	Delayed Judgment
Vivid Prosecution	3.50 ^a (0.84) ^a	4.50 ^b (0.55) ^a
Vivid Defense	3.41 ^a (0.66)	2.50 ^c (0.55)
Control	4.00 ^{ab} (0.89)	3.83 ^{ab} (0.75)

Note. Means sharing a common superscript are not statistically different at $\alpha = 0.05$ according to the Tukey-Kramer procedure. Standard deviations are indicated in parentheses.

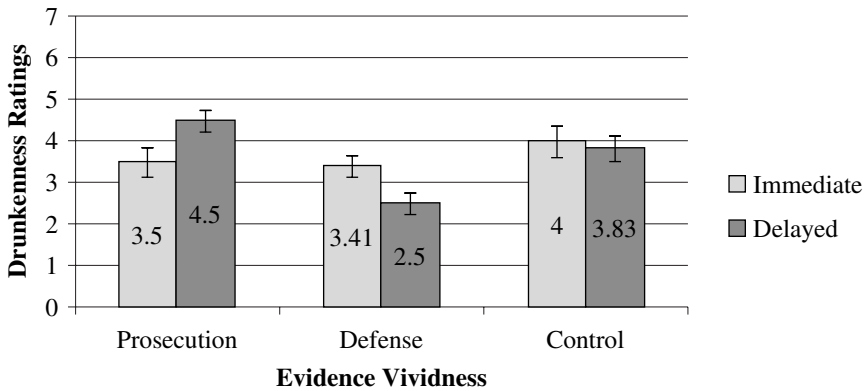
²⁶⁹ All t-statistics were greater than 2.0 and all p-values were less than 0.05.

²⁷⁰ For example, without knowing that the probative values for the vivid evidence were rated statistically the same as the probative values for the pallid evidence, some legitimately might wonder whether substituting words and phrases like "stagger" for "knock" and "a double" for "strong drink" might increase the probative value of the evidence. The data collected from pretest participants shows that concern is unwarranted.

²⁷¹ $F(2, 30) = 7.76$; $p = 0.002$ (main effect of the vividness presented); $F(2, 30) = 5.40$, $p = .01$ (interaction between vividness of the evidence and passage of time). See also Reyes et al., *supra* note 42, at 8–11 (discussing the results of the experiment).

²⁷² $F < 1.00$; $p > .05$.

FIGURE 1



However, the vividness effect did appear when participants waited forty-eight hours to fill out the questionnaires. The participants who read a trial scenario that contained vivid prosecution evidence and waited for two days to render their verdicts judged that the defendant was drunker than did those who did not wait to give their judgments.²⁷³ They also found the defendant drunker than did those who read vivid defense evidence.²⁷⁴ In addition, they remembered a higher proportion of prosecution evidence compared to other participants who read vivid defense evidence and waited forty-eight hours to give their judgments.²⁷⁵

We find a similar vividness effect when examining the guilt ratings from subjects who read vivid defense evidence and waited two days to fill out the questionnaires. These participants rated the defendant as significantly less drunk than did those who read vivid defense evidence but

²⁷³ For non note-taking subjects who read vivid prosecution evidence and experienced a time delay, $M = 4.50$, $SD = 0.55$; for non note-taking subjects who read vivid prosecution evidence and did not experience a time delay, $M = 3.50$, $SD = 0.84$, $t = 2.44$, $p = .035$. Planned t-test comparisons were accompanied by Tukey-Kramer analyses to stabilize the familywise error rate and avoid false positives.

²⁷⁴ For non note-taking subjects who read vivid prosecution evidence and experienced a time delay, $M = 4.50$, $SD = 0.55$; for non note-taking subjects who read vivid defense evidence and experienced a time delay, $M = 2.50$, $SD = 0.55$, $t = 6.30$, $p < .001$.

²⁷⁵ $t = 2.92$; $p = 0.0617$ (marginally significant). This variable was measured by performing a content analysis of each participant's written recall of the presented evidence. The inter-rater reliability was 0.95. Differences in opinion, if any, were resolved via conference.

For each participant, I then calculated a ratio of the number of prosecution arguments they remembered to the total number of arguments, both prosecution and defense ones, they remembered. The ratio can be denoted as $P / (P + D)$.

Further, I calculated the proportion of participants whose memory of the prosecution's evidence exceeded their memory of the defense's evidence. A greater proportion of participants who read vivid prosecution evidence recalled more of the prosecution's evidence ($t = 2.14$; $p = 0.0759$, which is marginally significant). Likewise, a greater proportion of participants who read vivid defense evidence recalled more of the defense's evidence ($t = 4.07$; $p < 0.01$). In sum, vivid evidence was more memorable.

gave their ratings immediately.²⁷⁶ They found the defendant less drunk than did those who read vivid prosecution evidence.²⁷⁷ They also recalled a higher proportion of defense evidence than did other participants who waited to give their judgments.²⁷⁸

In sum, the vividness effect appeared as hypothesized. When participants had to rely more on their memories to judge the defendant's guilt, those judgments were influenced by the facts presented to them more vividly. The vividly presented information was also more accessible in these participants' memories.

The second set of analyses examines what effect jury note-taking has on the vividness bias.²⁷⁹ The results appear in Table 4. As hypothesized, note-taking exacerbated the effect of vivid evidence on mock jurors who waited to rate the defendant's drunkenness.²⁸⁰ The guilt judgments from note takers who gave their judgments immediately did not significantly differ regardless of trial scenario presented—vivid prosecution, vivid defense, or pallid evidence.²⁸¹ Because these participants immediately recalled trial information, they did not need to rely as heavily on their memories or notes. Accordingly, these participants did not differ with respect to the amount of information they recalled from the trial or the proportion of prosecution or defense evidence they remembered.²⁸²

²⁷⁶ For non note-taking subjects who read vivid defense evidence and experienced a time delay, $M = 2.50$, $SD = 0.55$; for non note-taking subjects who read vivid defense evidence and did not experience a time delay, $M = 3.41$, $SD = 0.66$, $t = 2.59$, $p = .027$.

²⁷⁷ For non note-taking subjects who read vivid defense evidence and experienced a time delay, $M = 2.50$, $SD = 0.55$; for non note-taking subjects who read vivid prosecution evidence and experienced a time delay, $M = 4.50$, $SD = 0.55$, $t = 6.30$, $p < .001$.

²⁷⁸ $t = 2.92$; $p = 0.062$ (marginally significant). I followed the same method as that in note 275 to calculate defense evidence ratios. See *supra* note 275.

²⁷⁹ We might hypothesize that allowing jurors to take notes of all trial information would eliminate the differential recall of vivid facts underlying the vividness bias. Accordingly, if participants take note of all information presented at trial, vivid and pallid alike, than the vividness bias should disappear. But we know from the empirical literature on note taking that people tend to take notes on information they deem "important." Thus, if more vividly presented information is considered more "important" by jurors and note-taking affects their memories regarding the facts, then allowing jurors to take notes will enhance the vividness bias, which I hypothesized in this study.

²⁸⁰ $F(2, 30) = 33.47$, $p < .001$ (main effect of vividly presented evidence); $F(2, 30) = 26.71$, $p < .001$ (interaction between vividness of the evidence and passage of time).

²⁸¹ $F < 1.00$; $p > .05$.

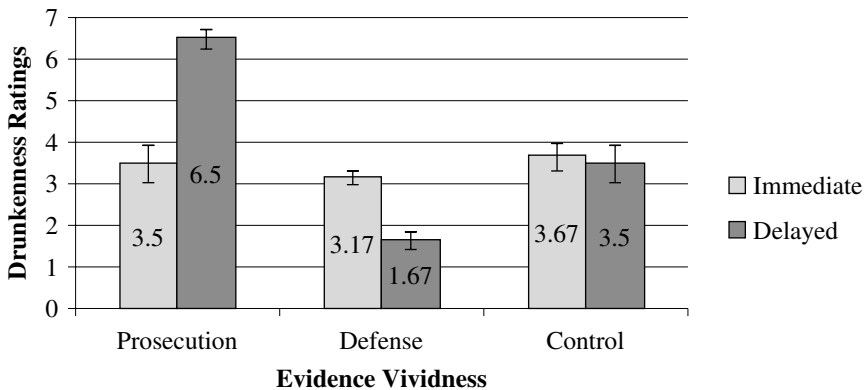
²⁸² $F < 1.00$; $p > .05$.

TABLE 4: Judgments of Note-Takers

	Drunkenness Ratings	
	Immediate Judgment	Delayed Judgment
Vivid Prosecution	3.50 ^a (1.05)	6.50 ^b (0.55)
Vivid Defense	3.17 ^a (0.41) (0.52)	1.67 ^c
Control	3.67 ^a (0.82)	3.50 ^a (1.05)

Note. Means sharing a common superscript are not statistically different at $\alpha = 0.05$ according to the Tukey-Kramer procedure. Standard deviations are indicated in parentheses.

FIGURE 2



However, the data from note-takers who waited forty-eight hours to rate the defendant's drunkenness is dramatically different. Allowing jurors to take notes did not alleviate the vividness bias. Note takers who read vivid prosecution evidence rated the defendant as dramatically drunker than did those who gave their ratings immediately.²⁸³ Moreover, they rated the defendant as considerably drunker than did either those who read vivid defense evidence²⁸⁴ or the control subjects.²⁸⁵

Further, a content analysis of their notes was performed to determine the proportion of vivid evidence the notes contained.²⁸⁶ The notes

²⁸³ For note-taking subjects who read vivid prosecution evidence and experienced a time delay, $M = 6.50$, $SD = 0.55$; for note-taking subjects who read vivid prosecution evidence and did not experience a time delay, $M = 3.50$, $SD = 1.05$, $t = 6.20$, $p < .001$.

²⁸⁴ For note-taking subjects who read vivid defense evidence and experienced a time delay, $M = 1.67$, $SD = 0.52$, $t = 15.63$, $p < .001$.

²⁸⁵ For note-taking subjects who read pallid evidence and experienced a time delay, $M = 3.50$, $SD = 1.05$, $t = 6.20$, $p < .001$.

²⁸⁶ In this content analysis, several readers rated each participant's notes for the amount of evidence recorded about the trial. The inter-rater reliability was 0.95, and differences were resolved via conference. See *supra* note 279.

from these participants contained a greater proportion of vivid evidence than did the notes from participants who read vivid defense evidence or pallid evidence.²⁸⁷ Further, these participants' memories for the evidence contained a greater proportion of vivid evidence.²⁸⁸

The opposite pattern of polarized guilt judgments occurred among those who read vividly presented defense evidence. Those who read vivid defense evidence and waited forty-eight hours rated the defendant significantly less drunk than did those who did not wait to give their guilt judgments,²⁸⁹ those who read vivid prosecution evidence,²⁹⁰ and those who read pallid evidence.²⁹¹ Thus, a very strong vividness effect was evident among note-takers who waited forty-eight hours to fill out the questionnaire about the trial.

Like their counterparts who read vivid prosecution evidence, note-takers who read vivid defense evidence recalled a greater proportion of the vivid evidence than did other participants.²⁹² Their notes also contained a greater proportion of the vivid defense evidence than did the notes from control subjects or participants who read vivid prosecution evidence.²⁹³

Note-taking did not alleviate the vividness bias, but did it actually exacerbate it? Yes, as revealed by Table 5, which compares the drunkenness ratings for note-takers who gave delayed guilt judgments and non note-takers who gave delayed guilt judgments. Recall that vivid evidence influenced both of these groups. Strikingly, note-takers gave even *more* polarized ratings of the defendant's guilt than did non note-takers.²⁹⁴ In other words, note-takers who read vivid prosecution evidence rated the defendant significantly drunker than did non note-takers who read the same vivid prosecution evidence.²⁹⁵ Their memory for the evidence also contained a greater proportion of (vivid) prosecution information than did the memories of non note-takers.²⁹⁶

²⁸⁷ $t = 3.00$; $p < 0.05$.

²⁸⁸ $t = 19.25$; $p < 0.01$.

²⁸⁹ For note-taking subjects who read vivid defense evidence and experienced a time delay, $M = 1.67$, $SD = 0.52$; for note-taking subjects who read vivid defense evidence and did not experience a time delay, $M = 3.17$, $SD = 0.41$, $t = 5.55$, $p < .001$.

²⁹⁰ For note-taking subjects who read vivid prosecution evidence and experienced a time delay, $M = 6.50$, $SD = 0.55$, $t = 15.63$, $p < .001$.

²⁹¹ For note-taking subjects who read pallid evidence and experienced a time delay, $M = 3.50$, $SD = 1.05$, $t = 3.83$, $p = .003$.

²⁹² $t = 19.25$; $p < 0.01$.

²⁹³ $t = 3.00$; $p < 0.05$.

²⁹⁴ $F(2, 30) = 74.29$; $p < .001$ (main effect of the vividness of the evidence); $F(2, 30) = 14.53$, $p < .001$ (interaction between vividness of the evidence and jurors' use of notes).

²⁹⁵ For note-taking subjects who read vivid prosecution evidence, $M = 6.50$, $SD = 0.55$; for non note-taking subjects who read vivid prosecution evidence, $M = 4.50$, $SD = 0.55$, $t = 6.30$, $p < .001$.

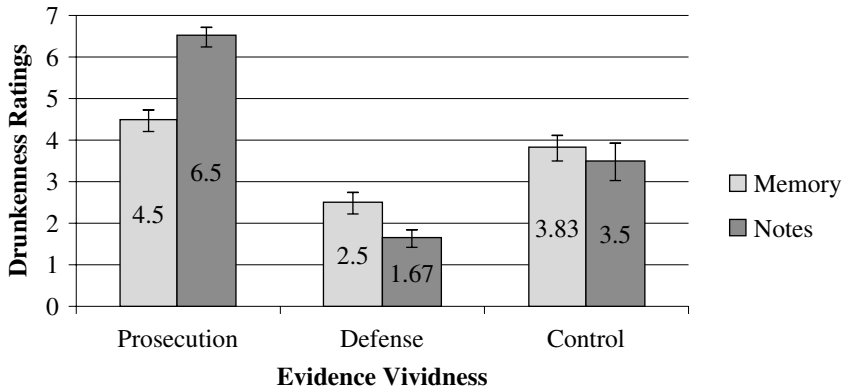
²⁹⁶ $t = 3.00$; $p < 0.05$.

TABLE 5: Comparison of Delayed Judgments

	Drunkenness Ratings	
	Memory-Only Subjects	Note-Taking Subjects
Vivid Prosecution	4.50 ^a (0.55)	6.50 ^b (0.55)
Vivid Defense	2.50 ^c (0.55)	1.67 ^d (0.52)
Control	3.83 ^{ae} (0.75)	3.50 ^e (1.05)

Note. Means sharing a common superscript are not statistically different at $\alpha = 0.05$ according to the Tukey-Kramer procedure. Standard deviations are indicated in parentheses.

FIGURE 3



Note-takers who read vivid defense evidence and experienced a time delay similarly gave more polarized judgments of the defendant's drunkenness. Specifically, note-takers who read vivid defense evidence rated the defendant as significantly less drunk than did non note-takers who read vivid defense evidence.²⁹⁷

Taken together, these results support the hypothesis that, far from alleviating the effects of vivid evidence on jurors' legal judgments, note-taking *exacerbates* the vividness bias. Note-taking exacerbates this bias by drawing jurors' attention to the vivid evidence and ensuring that this vivid information is more readily accessible in their memories when they decide the guilt or innocence of a defendant. This is true even when the vividness has no probative value. This surprising finding has many implications for the American legal system.

²⁹⁷ For note-taking subjects who read vivid defense evidence, $M = 1.67$, $SD = 0.52$; for non note-taking subjects who read vivid defense evidence, $M = 2.50$, $SD = 0.55$, $t = 2.69$, $p = 0.023$.

IV. IMPLICATIONS AND OBJECTIONS

A. *Implications*

This experiment demonstrates that juror note-taking, an apparently minor procedural issue typically left to the discretion of local courts, has a hitherto unnoticed impact on substantive decision making. The general theme throughout this Section is that there may be a dangerous and widespread mismatch between courts' armchair behavioral predictions and actual decision making. Additional research is desperately needed to resolve this situation.

The experiment reported in this Article yielded surprising results. It provides evidence that contradicts the belief of empirical researchers that allowing jurors to take notes during trial has, at least, no "harmful consequences."²⁹⁸ It certainly challenges the prevailing legal view that presupposes that note-taking adds value to jury trials by improving memory for facts and improving the accuracy of legal decisions.²⁹⁹ These results raise two questions: Should jurors be permitted to take notes if doing so can skew their legal judgments? More importantly, who should make that decision: individual trial courts or other policy makers?

This study has significant implications regarding whether jurors should be allowed to take notes during trials. Prior empirical evidence has tepidly supported the view that note-taking can increase memory for facts and improve legal judgments.³⁰⁰ The current experiment is the first to find evidence that jury note-taking may have a potentially negative impact on verdicts. Further research must be done to replicate these results and to determine the degree to which note-taking can exacerbate the vividness bias on jurors' legal decisions.

Assuming that the results from this experimental study are robust, what should be done? Some might say "nothing." The argument is a practical one: because each party is incentivized to present the best case possible to the trier of fact, each party will present its case vividly. As one commentator has said, the vividness heuristic creates an incentive for people to manipulate it to their own ends, and because this bias can be exploited, potential beneficiaries will ensure that it is.³⁰¹ Even if allowing jurors to take notes during trial proceedings exacerbates the vividness bias, it will be a zero-sum game. This argument has force, but

²⁹⁸ Penrod & Heuer, *supra* note 101, at 258.

²⁹⁹ See *supra* text accompanying notes 87–90.

³⁰⁰ See *supra* Part II.B. 2. The current experiment supports this finding, albeit not necessarily in a positive manner. Note-taking did increase jurors' memory for facts. However, it increased their memory for *vividly presented* facts at the expense of their memory for pallid facts. See *supra* Part III.

³⁰¹ Amitai Aviram, *The Placebo Effect of Law: Law's Role in Manipulating Perceptions*, 75 GEO. WASH. L. REV. 54, 74 (2006).

there are two responses: one theoretical and one practical. In terms of trial practice, it is not always clear that each side has the resources to present the most vivid case possible to the jury. For example, prior research indicates that vividly presented visual aids like photographs and videotapes can bias jurors by lowering their threshold to convict a defendant in a criminal case,³⁰² making conviction more likely.³⁰³ Prosecutors may have greater financial resources to present this potentially biasing demonstrative evidence to a jury.³⁰⁴ Moreover, the practical reality of criminal trials is that defendants often do not present a case *at all* to the factfinder, which may further exacerbate the effects of the vividness bias.

Moreover, recognizing that note-taking is just one of many local procedural rules—which are heterogeneous and can vary from judge to judge within a given jurisdiction—and assuming that empirical evidence indicates that a particular local procedural rule impairs procedural due process, who should make the decision whether to ban the practice or not? Should it be the decision of individual judges to examine the research and decide for themselves whether to ban the practice in their courtrooms? Or should higher courts or legislative bodies make these pronouncements? To the extent these procedural practices implicate transparency, equity, or accuracy, it appears that uniform guidelines, either to ban the procedure, allow it, or modify it, are necessary. Legislatures or rules committees seem the most likely choice to make such recommendations, given their informational and resource advantages over the trial and appellate courts.

Others might argue that requiring legislative bodies or rules committees to examine these matters will place too great a burden on them. Others might further argue that the trial court is in the best position to determine whether certain local trial procedures are appropriate for any particular jury. These points are well taken, but they ignore the force of the empirical evidence. If a particular local rule or practice is empirically shown to have negative systematic effects, it is difficult to imagine how a judge would accurately determine that, in any particular case, the potential negative effects will be avoided. And the extent to which individual judges may disagree whether to employ that procedural rule in

³⁰² A conviction resulting from a “clear and convincing” standard of guilt instead of a “beyond a reasonable doubt” standard of guilt would violate a defendant’s due process rights. *See, e.g., In re Winship*, 397 U.S. 358, 364 (1970) (holding that the Fourteenth Amendment’s Due Process Clause requires proof beyond a reasonable doubt of every fact necessary to convict); *cf. Cage v. Louisiana*, 498 U.S. 39, 40–41 (1990) (finding reversible error where jurors were instructed to convict the defendant unless they have “such doubt as would give rise to grave uncertainty”—an instruction requiring a lesser degree of certainty of guilt to convict than the reasonable-doubt standard).

³⁰³ *See supra* Part III.A.1.a.

³⁰⁴ Similarly, in civil cases, a party with greater financial resources (for example, a large corporation) might also be able to present a more vivid case to a trier of fact.

any particular instance only underscores the need for uniformity. The empirical data have not shown the need for such measures yet, with respect to jury-note taking or any other local procedural rule, but more research—and greater academic discussion of these rules—is necessary.

The results from this experiment raise due process concerns for litigants regarding the transparency, equity, and accuracy of legal decision-making. It may be unremarkable to argue that judicial decisions should be transparent—that is, it should be clear from the evidence how a trier of fact reached its ultimate decision. Yet, legal decisions are not transparent if they are based on factors other than the evidence, particularly factors that are outside of the decision maker's conscious awareness.

Moreover, with some caveats, we legitimately expect that presenting the same evidence will lead to the same legal decision regardless of the characteristics of the fact finder. It should trouble us if two similarly situated plaintiffs present identical evidence yet receive different verdicts from two different tribunals, particularly if one factfinder was permitted to take notes while the other was not. To the extent that note-taking exacerbates the vividness bias, and given that some judges allow note-taking while others do not, this raises serious concerns regarding the equitable treatment of litigants under the law.

The experimental results also have implications for the accuracy of legal decision-making. In the experiment presented in this Article, the probative value of the vividly presented evidence did not differ from the probative value of its pallid counterpart, yet it had a disproportionate effect on judgments of the defendant's guilt. We could imagine scenarios in which admissible evidence with low probative value contains a high potential for subconscious bias.³⁰⁵ To the extent such lowly probative evidence has a disproportionate impact on legal judgments, the accuracy of those judgments may suffer.

These procedural due process concerns—transparency, equity, and accuracy—are not implicated only with respect to jury note-taking. Judges have broad discretion to implement a myriad of other jury trial innovations.³⁰⁶ These innovations might also raise these concerns. For

³⁰⁵ If the bias is subconscious, it is not clear that such evidence would be excluded by a trial judge under Federal Rule of Evidence 403, which requires the exclusion of evidence whose probative value is outweighed by its unfairly prejudicial effect. FED. R. EVID. 403.

³⁰⁶ For example, the Michigan Supreme Court recently issued a press release and order allowing trial judges to experiment with several innovations, including summing up the evidence for the jury, allowing jurors to take notes, and allowing jurors to discuss the evidence before deliberations commence. *See New Jury Reform Rules Aimed at Greater Engagement by Jurors*, available at <http://courts.michigan.gov/supremecourt/Press/PR06-29-11Jury%20Reform.pdf> (permitting jurors, with the judge's permission, to submit questions to witnesses through the judge, take notes during trial, discuss evidence among themselves in the jury room during trial recess, be provided with written summaries of depositions, and provide the judge with a list of issues that divide or confuse them) (last visited October 18, 2011); *see also* Order

example, allowing attorneys to sum up evidence at a jury trial's interim points may invite framing effects, despite a judge's instructions to the jury that they should not treat the attorney's summation as evidence.³⁰⁷ These framing effects might serve as a filter that biases how jurors view the rest of the evidence in the case. This may lead to unclear, inconsistent, and inaccurate judgments by fact finders who are exposed to this practice.

Similarly, allowing jurors to discuss the case before officially deliberating might also raise these procedural due process concerns. To the extent premature discussions allow jurors to decide the outcome of the trial, a juror could fall prey to the confirmation bias, where the juror filters the remaining evidence presented to her in search of evidence that matches her view of the case.³⁰⁸ If the practice spreads to enough jurors early in the trial, it could lead to groupthink, a phenomenon in which people conform more quickly to a majority view without weighing all the facts, especially those contradicting the majority opinion.³⁰⁹ This practice also raises the risk of opaque, inequitable, and incorrect legal judgments.

In sum, the mismatch between judicial attitudes toward note-taking and the empirical reality of note-taking is not an isolated issue. It is just one example of a local procedural rule that has ripple effects that can be felt throughout the legal system in the form of biased decisions by legal fact finders. Additional research is necessary to determine how to stem this tide.

(Mich. June 29, 2011) (amending Michigan Court Rules 2.512, 2.513, 2.514, 2.515, 2.516, and 6.414), available at http://courts.michigan.gov/supremecourt/Resources/Administrative/2005-19_06-29-11_order.pdf (last visited October 18, 2011) [hereinafter Michigan Supreme Court Order].

Judge Hathaway dissented from the Order. See Michigan Supreme Court Order, *supra* (Hathaway, J. dissenting) (“[T]he overwhelming majority of public comments . . . oppose most of these procedures. Those comments were submitted by a broad spectrum of the legal community, and reflect a host of valid, practical and legal issues that have not been resolved [T]here is inadequate objective evidence establishing that many of these so-called ‘reforms’ will result in any substantial improvement in the jury trial system.”).

³⁰⁷ These limiting instructions are notoriously ineffective as an empirical matter. See, e.g., Joel D. Lieberman & Jamie Arndt, *Understanding the Limits of Limiting Instructions: Social Psychological Explanations for the Failures of Instructions to Disregard Pretrial Publicity and Other Inadmissible Evidence*, 6 PSYCHOL. PUB. POL’Y & L. 677, 703 (2000) (reviewing the literature and noting that limiting instructions often are ineffective because of psychological processes like belief perseverance, the hindsight bias, reactance theory, and the theory of ironic processes of mental control).

³⁰⁸ See P. C. Wason, *On the Failure to Eliminate Hypotheses in a Conceptual Task*, 12 Q. J. EXPERIMENTAL PSYCHOL. 129, 139 (1960).

³⁰⁹ See IRVING L. JANIS., *GROUPTHINK: PSYCHOLOGICAL STUDIES OF POLICY DECISIONS AND FIASCOES* 174–75 (Houghton Mifflin Co.) (2d ed. 1982).

B. *Objections*

The experimental results reported in this Article provide counterintuitive evidence that local procedural rules can affect substantive legal outcomes, and not always for the better. Discussed above, these results have numerous due process implications. But experimental results should be interpreted with caution, and the results reported in this Article are no exception.

Laboratory experiments can be criticized for lacking external validity. This may be because the stakes in a laboratory experiment are significantly lower than the stakes in an actual trial.³¹⁰ Jurors may behave differently when they have the fate of a real defendant in their hands. For example, if made aware of them, jurors may be more motivated to overcome framing effects and biases, like the vividness bias.³¹¹ In an ideal experiment, study participants would watch a live trial in an actual courtroom and deliberate before providing data to the experimenters. A researcher with infinite time and funds might be able to replicate a real trial with actors playing the parts of the plaintiff, defendant, witnesses, judges, and attorneys. But there is no ethical way to place study participants under the belief that their judgments might truly affect the freedom or the financial situation of an actual defendant.³¹²

It would be a mistake, however, to conclude that these limitations prevent experimental studies from teaching us anything valuable about juror behavior.³¹³ Although the possibility that the exacerbation of the vividness bias observed in this experiment would disappear in a real-world setting cannot be ruled out, there is evidence that results obtained in hypothetical studies, like the robust effects obtained in this study, generally reflect reality.³¹⁴ In fact, “[a] misplaced preoccupation with external validity can lead us to dismiss useful research.”³¹⁵

Similarly, in an ideal experiment, jurors would deliberate with other jurors before rendering their verdicts, as they would in a real trial setting. Of course, the reality of experimental testing is that additional costs, in terms of time and resources, make this difficult. This itself should not

³¹⁰ See, e.g., Heuer & Penrod, *supra* note 132, at 232 (citing WALLACE D. LOH, *SOCIAL RESEARCH IN THE JUDICIAL PROCESS: CASES, READINGS, AND TEXT* (1984)).

³¹¹ See, e.g., Rachlinski et al., *Does Unconscious Racial Bias Affect Trial Judges?*, *supra* note 5, at 1226–31 (demonstrating that trial judges can overcome biases, to an extent, when they are aware of the biases and motivated to avoid them).

³¹² Many research universities have Institutional Review Boards designed specifically to protect human subjects from unethical experimenter behavior. See, e.g., INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS, <http://irb.illinois.edu/> (last visited Sept. 7, 2011). See generally 45 C.F.R. 46 (1985) (regulating human subjects research).

³¹³ Kelman et al., *supra* note 27, at 73.

³¹⁴ *Id.*

³¹⁵ Douglas G. Mook, *In Defense of External Invalidity*, 38 AM. PSYCHOL. 379, 379 (1983).

lead us to minimize experimental findings that focus on the individual juror. In their seminal book on the American jury, Kalven and Zeisel demonstrated that the best predictor of the outcome of a jury deliberation is the initial judgments of the individual jurors before the deliberation begins.³¹⁶ According to Kalven and Zeisel, approximately 90% of the time, final jury votes after deliberation will match the individual judgments of those jurors in the majority before the deliberation.³¹⁷ Moreover, research on panel effects suggests that individual judgments become more polarized after deliberation;³¹⁸ thus, the results from this experiment may actually understate the vividness bias in real trials. Further, it is not obvious that judges, who often take notes during trials, are unaffected by the vividness bias.³¹⁹ Moreover, bench trials do not require judges to deliberate before rendering their verdicts.³²⁰

Some examining the experimental results reported in this Article may wonder how much the vividness bias matters. Past empirical research demonstrates that the greatest predictor of jury verdicts is the strength of the evidence presented.³²¹ If this is true, then the concern that the vividness effect can systematically bias juror verdicts—and that note-taking appears to exacerbate this bias—may be diluted by other considerations. There are several responses to this concern. Much of what we know about legal rules stems not from an empirical examination of how these rules operate, but from intuitive hunches.³²² Sometimes, however, hunches are wrong. Empirical scholarship can be a powerful tool in illuminating instances where that is the case. Therefore, increased knowledge of how these rules affect legal judgments is valuable in itself.

Putting this point aside, there are other reasons that the vividness bias, and its exacerbation through jury note-taking, might be important to policy makers and practitioners. A wealth of empirical research demon-

³¹⁶ HARRY KALVEN, JR. & HANS ZEISEL, *THE AMERICAN JURY*, 488 (1966). This is true for many reasons, one of which is the fact that the decisions of groups tend to “polarize” toward the majority view. See Jerry K. Palmer & James M. Loveland, *The Influence of Group Discussion on Performance Judgments: Rating Accuracy, Contrast Effects, and Halo*, 142 J. PSYCH.: INTERDISCIPLINARY & APPLIED 117 (2008). This topic—how note-taking is affected by group deliberation processes—is ripe for further study.

³¹⁷ KALVEN & ZEISEL, *supra* note 313, at 488.

³¹⁸ Palmer & Loveland, *supra* note 313, at 117.

³¹⁹ See, e.g., Rachlinski et al., *Does Unconscious Racial Bias Affect Trial Judges?*, *supra* note 4, at 1195 (finding that judges harbor the same implicit biases, as do jurors, that affect their judgment; nonetheless, judges can compensate for these biases if they are sufficiently motivated).

³²⁰ *Id.*

³²¹ NEIL VIDMAR & VALERIE P. HANS, *AMERICAN JURIES* 339 (2007).

³²² See, e.g., William C. Thompson & Maithilee K. Pathak, *Empirical Study of Hearsay Rules: Bridging the Gap Between Psychology and Law*, 5 PSYCHOL., PUB. POL’Y & L. 456, 456–57 (1999) (“The legal rules regarding hearsay rest heavily on ‘empirical hunches’ that could usefully be evaluated through psychological research.”).

strates that so-called extralegal factors can affect jury judgments when the strength of the evidence is at the margins.³²³ In other words, it is likely that when the evidence is not overwhelming—when it is either at the line of reasonable doubt, clear and convincing, or a preponderance—extralegal factors and bias might play a prominent role in jury decision-making.³²⁴ Moreover, the experiment reported in this Article supports the view that framing effects and biases may shape how the jury perceives the strength of the evidence in the first place. If this is the case, then research on biases, framing effects, and local procedural rules that might enhance them, deserves serious continued study.

Finally, some might wonder whether local procedural rules and the vividness bias are worth continued study if the effects are not institutionally systematic. For example, it might be said that it is not always the case that a prosecutor will put forth vivid evidence while a defendant will not (or vice versa). Accordingly, although note-taking jurors' decisions will be biased in the direction of the vivid evidence, the effect on trial outcomes is not always the same: it will not always favor the plaintiff or prosecutor and it will not always favor the defendant. Moreover, the vividness bias in the courtroom might be a zero-sum game; for example, both sides may present their evidence as vividly as possible and the vividness of one party's evidence would offset the vividness of the other party's evidence. These are fair points, but they underline exactly why this topic is important and why further research is necessary. As discussed in the prior section, resource disparities (like having the funds to present vivid images of one's case to a jury) might be institutional, particularly in the criminal context. Moreover, scholars of legal ethics might be interested in this research when investigating whether attorneys should or should not attempt to use heuristics that might bias juries on behalf of their clients. More research must be done to understand fully the nature of this bias and the ways in which local procedural rules, both formal and informal, interact with it. The research reported in this Article is a first step down that path.

³²³ See CHRISTINE L. RUVA, HOW PRETRIAL PUBLICITY AFFECTS JUROR DECISION MAKING AND MEMORY (2010) (pretrial publicity affects views of the evidence); J. Kevin Barge et al., *The Effects of Nonverbal Communication and Gender on Impression Formation in Opening Statements*, 54 S. COMM. J. 330, 331 (1989) (finding an attorney's nonverbal cues, including pauses and stuttering, affect jurors' views of the evidence against his client); Bonnie Erickson et al., *Speech Style and Impression Formation in a Court Setting: The Effects of "Powerful" and "Powerless" Speech*, 14 J. EXPERIMENTAL SOCIAL PSYCH. 266 (1978) (demonstrating that speech style of defendant's attorney affects views of evidence against the defendant); Harry Sigall & Nancy Ostrove, *Beautiful but Dangerous: Effects of Offender Attractiveness and Nature of the Crime on Juridic Judgment*, 31 J. PERSONALITY & SOCIAL PSYCH. 410 (1975) (demonstrating that characteristics of the defendant herself affects jurors' views of the evidence).

³²⁴ See RUVA, *supra* note 320.

CONCLUSION

Perhaps policy makers do not care about local procedural rules. This Article demonstrates that they should. The results of the experiment presented in this Article underscore the need for a thorough behavioral analysis of legal rules. This is true particularly with respect to local procedural rules, which are heterogeneous but can have systematic substantive effects on legal outcomes. The experiment reported in this Article demonstrates that a local rule, like allowing jurors to take notes during trial, exacerbates behavioral framing effects in significant, systematic ways. These experimental findings run counter to conventional legal wisdom about juror note-taking and have implications for the legal system as a whole. Concerns about the effects of these local procedural rules on the transparency, equity, and accuracy of juror decision-making necessitates further empirical research and discussion by legal academics about the efficacy and systematic consequences of these rules.

