

The Impact of Neuroscience on Health Law

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Abstract Advances in neuroscience have implications for criminal law as well as civil and regulatory law, including health, disability, and benefit law. The role of the behavioral and brain sciences in health insurance claims, the mental health parity debate, and disability proceedings is examined.

Keywords Health insurance · Disability · Mental health parity · Neuroscience · Neuroimaging · Neuroethics · Neurolaw · Public · Media

The burgeoning neurolaw literature focuses heavily on the impact of advances in neuroscience for criminal law,¹ criminal procedure,² and evidence law,³ as well as tort law,⁴ property law,⁵ intellectual property,⁶ confidentiality and privacy,⁷ protection of

human subjects,⁸ and the regulation of neuroscience-based technologies.⁹ Little attention has been paid, however, to the implications of neuroscience for more traditional civil and regulatory health law issues.

In this essay, I explore the ways in which neuroscience impacts a range of American health, disability, and benefit law issues, including the scope of public and private health insurance benefits, the mental health parity debate, and the distribution of benefits under social security and other programs. I find that patients, patient advocacy organizations, litigants, lobbyists, legislators, and scholars are relying on advances in neuroscience to characterize differences in brain structure and function as health conditions worthy of insurance coverage, protected civil status, and disability and other benefits. Al-

¹ See, e.g., Owen D. Jones et al., *Law, Responsibility, and the Brain*, 5 PLOS BIOLOGY 693 (2007); O. Carter Snead, *Neuroimaging and the “Complexity” of Capital Punishment*, 82 N.Y. U. L. Rev. 1265 (2007); O. Carter Snead, *Neuroimaging, Entrapment, and the Predisposition to Crime*, 7(9) AM. J. BIOETHICS-NEUROSCIENCE 60 (2007); Jay D. Aronson, *Brain Imaging, Culpability and the Juvenile Death Penalty*, 13 PSYCH. PUB. POL’Y & L. 115 (2007); Melissa S. Caulum, *Postadolescent Brain Development: A Disconnect between Neuroscience, Emerging Adults, and the Corrections System*, 2007 WIS. L. EV. 729 (2007); Abram S. Barth, *A Double-Edged Sword: The Role of Neuroimaging in Federal Capital Sentencing*, 33 AM. J. L. & MED. 501 (2007); Debra Niehoff, *Invisible*

Scars: The Neurobiological Consequences of Child Abuse, 56 DEPAUL L. EV. 847 (2007); Owen D. Jones, *Law, Evolution, and the Brain: Applications and Open Questions*, in LAW & THE BRAIN 57 (Semir Zeki & Oliver Goodenough eds., 2006); Joshua Greene and Jonathan Cohen, *For the Law, Neuroscience Changes Nothing and Everything*, in LAW & THE BRAIN (Semir Zeki & Oliver Goodenough eds., 2006); Owen D. Jones & Timothy H. Goldsmith, *Law and Behavioral Biology*, 105(2) COLUMBIA L. EV. 405 (2005); Stephen J. Morse, *Brain Overclaim Syndrome and Criminal Responsibility: A Diagnostic Note*, 3(2) OHIO ST. J. CRIM. L. 397 (2006); Stephen J. Morse, *Moral and Legal Responsibility and the New Neuroscience*, in NEUROETHICS: DEFINING THE ISSUES IN THEORY, PRACTICE, AND POLICY 33 (Judy Illes ed. 2006); Oliver R. Goodenough, *Responsibility and Punishment: Whose Mind? A Response*, in LAW & THE BRAIN 259 (Semir Zeki & Oliver Goodenough eds., 2006); Eileen P. Ryan & Sarah B. Berson, *Mental Illness and the Death Penalty*, 25 ST. LOUIS UNIV. PUB.

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though stakeholders by and large are not making completely unfounded or speculative claims about neuroscience, what does give me cause for pause is the appropriateness of the subsequent normative argument; that is, that all brain differences should be treated as covered or protected conditions for purposes of health, disability, and benefit law. I conclude

that advances in neuroscience give us reason to revisit age-old health, disability, and benefit law questions (such as, “What kinds of mental suffering create legitimate claims from others through public or private health insurance?”),¹⁰ but that neuroscience does not yet answer these questions. Because I anticipate that neuroscience will continue to play a role in the development and shaping of health,

L. EV. 351 (2006); Robert M. Sapolsky, *The Frontal Cortex and the Criminal Justice System*, in LAW & THE BRAIN 227 (Semir Zeki & Oliver Goodenough eds., 2006); Richard E. Redding, *The Brain-Disordered Defendant: Neuroscience and Legal Insanity in the Twenty-First Century*, 56 AM. U. L. EV. 51 (2006); James H. Fallon, *Neuroanatomical Background to Understanding the Brain of the Young Psychopath*, 3 OHIO ST. J. CRIM. L. 341 (2006); Staci A. Gruber & Deborah A. Yurgelun-Todd, *Neurobiology and the Law: A Role in Juvenile Justice?* 3 OHIO ST. J. CRIM. L. 321 (2006); Katherine H. Federle, *Introduction to the Mind of a Child: The Relationship between Brain Development, Cognitive Functioning, and Accountability under the Law* 3(2) OHIO ST. J. CRIM. L. 317 (2006); Jessie A. Seiden, *The Criminal Brain: Frontal Lobe Dysfunction in Capital Proceedings*, 16 CAPITAL DEFENSE J. 395 (2004); Lucy C. Ferguson, *The Implications of Developmental Cognitive Research on “Evolving Standards of Decency” and the Imposition of the Death Penalty on Juveniles*, 54 AM. U. L. EV. 441 (2004); Laura Reider, *Toward a New Test for the Insanity Defense: Incorporating the Discoveries of Neuroscience into Moral and Legal Theories*, 46 UCLA L. EV. 289 (1998).

² See, e.g., Sean Kevin Thompson, *A Brave New World of Interrogation Jurisprudence?*, 33 AM. J. L. & MED. 341 (2007); Sarah E. Stoller & Paul Root Wolpe, *Emerging Neurotechnologies for Lie Detection and the Fifth Amendment*, 33 AM. J. L. & MED. 359 (2007); Michael S. Pardo, *Neuroscience Evidence, Legal Culture, and Criminal Procedure*, 33 AM. J. CRIM. L. 301 (2006); Erich Taylor, *A New Wave of Police Interrogation? “Brain Fingerprinting,” The Constitutional Privilege Against Self-Incrimination, and Hearsay Jurisprudence*, 2006 U. ILL. J. L. TECH. & POL’Y 287 (2006); Sean Kevin Thompson, *The Legality of the Use of Psychiatric Neuroimaging in Intelligence Interrogation*, 90(6) CORNELL L. EV. 1601 (2005); Richard G. Boire, *Searching the Brain: The Fourth Amendment Implications of Brain-Based Deception Devices*, 5(2) AM. J. BIOETHICS 62 (2005).

³ See, e.g., Mark Pettit, *fMRI and BF Meet FRE: Brain Imaging and the Federal Rules of Evidence*, 33 AM. J. L. & MED. 319 (2007); Leo Kittay, *Admissibility of fMRI Lie Detection: The Cultural Bias against “Mind Reading” Devices*, 72 BROOKLYN L. EV. 1351 (2007); Erin A. Egan, *Neuroimaging as Evidence*, 7(9) AM. J. BIOETHICS-NEUROSCIENCE 62 (2007); Jocelyn Downie & Ronald Murphy, *Inadmissible, Eh?* 7(9) AM. J. BIOETHICS-NEUROSCIENCE 67 (2007); Charles N.W. Keckler, *Cross-Examining the Brain: A Legal Analysis of Neural Imaging for Credibility Impeachment*, 57 HASTINGS L.J. 509 (2006); Archie Alexander, *Functional Magnetic Resonance Imaging Lie Detection: Is a “Brainstorm” Heading for the Gatekeeper?* 7 HOUSTON J. HEALTH L. & POL’Y 1 (2006).

⁴ See, e.g., Betsy J. Grey, *Neuroscience, Emotional Harm, and Emotional Distress Tort Claims*, 7(9) AM. J. BIOETHICS-NEUROSCIENCE 65 (2007); Adrian M. Viens, *The Use of Functional Neuroimaging Technology in the Assessment of Loss and Damages in Tort Law*, 7(9) AM. J. BIOETHICS-NEUROSCIENCE 63 (2007); Adam Kolber, *Pain Detection and the Privacy of Subjective Experience*, 33 AM. J. L. & MED. 433 (2007).

⁵ See, e.g., Jeffrey Evans Stake, *The Property ‘Instinct,’ in LAW & THE BRAIN* 185 (Semir Zeki & Oliver Goodenough eds., 2006).

⁶ See, e.g., Henry T. Greely, *Prediction, Litigation, Privacy, and Property: Some Possible Legal and Social Implications of Advances in Neuroscience*, in NEUROSCIENCE AND THE LAW: BRAIN, MIND, AND THE SCALES OF JUSTICE 114 (Brent Garland ed., 2004).

⁷ See, e.g., Stacey A. Tovino, *Functional Neuroimaging Information: A Case for Neuro Exceptionalism?* 34 FLA. ST. U. L. EV. 415 (2007); Henry T. Greely, *The Social Effects of Advances in Neuroscience: Legal Problems, Legal Perspectives*, in NEUROETHICS: DEFINING THE ISSUES IN THEORY, PRACTICE, AND POLICY 245 (Judy Illes ed., 2006); Stacey A. Tovino, *The Visible Brain: Confidentiality and Privacy Implications of Functional Magnetic Resonance Imaging*, Ph.D. Dissertation, University of Texas Medical Branch (2006); Stacey A. Tovino, *The Confidentiality and Privacy Implications of Functional Magnetic Resonance Imaging*, 33(4) J. L. MED. & ETHICS 844 (2005); Committee on Science and Law, *Are Your Thoughts Your Own? “Neuroprivacy” and the Legal Implications of Brain Imaging*, 60 CBA RECORD 407 (2005); Greely, *supra* note 6, at 114.

⁸ See, e.g., Jennifer Kulynych, *Some Thoughts about the Evaluation of Non-Clinical Functional Magnetic Resonance Imaging*, 7(9) AM. J. BIOETHICS-NEUROSCIENCE 57 (2007); Jennifer Kulynych, *The Regulation of MR Neuroimaging Research: Disentangling the Gordian Knot*, 33 AM. J. L. & MED. 295 (2007); Jennifer Kulynych, *Legal and Ethical Issues in Neuroimaging Research: Human Subjects Protection, Medical Privacy, and the Public Communication of Research Results*, 50(3) BRAIN & COGNITION 345 (2002).

⁹ See, e.g., Henry T. Greely & Judy Illes, *Neuroscience-Based Lie Detection: The Urgent Need for Regulation*, 33 AM. J. L. AND MED. 377 (2007); Henry T. Greely, *Premarket Approval Regulation for Lie Detection: An Idea Whose Time May Be Coming*, 5(2) AM. J. BIOETHICS 50 (2005).

¹⁰ James E. Sabin & Norman Daniels, *Determining “Medical Necessity” in Mental Health Practice*, 24(6) HASTINGS CENTER EP. 5, 5 (1994).

disability, and benefit law and policy, I recommend that lawyers and scholars who work in these areas (and not just those who self-identify as neurolawyers and neuroethicists) be mindful of the ways in which stakeholders will use neuroscience to bear on the formulation and interpretation of such law.¹¹

Three prefatory notes are in order. First, I will be focusing on the impact of neuroscience for issues in American health law and policy, with which I am familiar. I hope to examine the impact of neuroscience on other countries' health, disability, and benefit structures in the future. Second, the field of health law is extraordinarily broad and rapidly changing.¹² Here, I select just a few examples that I think are illustrative, although not exhaustive, of the ways in which stakeholders currently are using neuroscience to impact health law and policy. I hope that readers with background in health law and policy will identify additional, relevant settings in which neuroscience-based arguments may be raised and will question whether such arguments should work in these settings.

Third, I use the phrase "mental disorders" to refer to clinically significant behavioral or psychological syndromes or patterns that occur in individuals and that are associated with present distress or disability or with a significantly increased risk of suffering death, pain, disability, or an important loss of freedom. Unfortunately, my and other definitions do not adequately specify precise boundaries for the concept of mental disorder. In addition, they imply a distinction between the "mental" and "physical" that may not exist. I present this definition here simply because it is as useful as any other and may help guide distinctions between normality and pathology.

¹¹ See David B. Wexler, *Putting Mental Health into Mental Health Law: Therapeutic Jurisprudence*, in *ESSAYS IN THERAPEUTIC JURISPRUDENCE* 7, 10 (David B. Wexler & Bruce J. Winick eds., 1991) (encouraging stakeholders to consider ways in which the clinical literature might bear on the formulation of legal arrangements).

¹² Health law has been described as both an exciting and interdisciplinary field as well as an incoherent discipline. See, e.g., Henry T. Greely, *Some Thoughts on Academic Health Law*, 41(2) *WAKE FOREST L. EV.* 391 (2006); Einer R. Elhauge, *Can Health Law Become a Coherent Field of Law?* 41(2) *WAKE FOREST L. EV.* 365 (2006); Mark A. Hall, *The History and Future of Health Care Law: An Essentialist View*, 41(2) *WAKE FOREST L. EV.* 347 (2006); Mark A. Hall et al., *Rethinking Health Law*, 41(2) *WAKE FOREST L. EV.* 341 (2006).

Mental Disorder Statistics

This essay involves the use of neuroscience in civil and administrative proceedings involving Americans with mental disorders. Mental disorders are common in the U.S. and abroad.¹³ According to the National Institute of Mental Health (NIMH), an estimated or 57.5 million American adults suffer from a diagnosable mental disorder in a given year.¹⁴ Approximately one in seventeen American adults suffer from a serious mental illness.¹⁵ And, an estimated 45% of American adults who have one diagnosable mental disorder meet criteria for at least one more diagnosable mental disorder.¹⁶

Historically, individuals with mental disorders were treated with contempt, fear, and cruelty, perhaps due to the belief that mental disorders stemmed from parental misdeeds, demonic possession, or deficient character.¹⁷ Mental disorders remain poorly understood today.¹⁸ The National Mental Health Association, recently renamed Mental Health America (MHA), estimates that 71% of Americans still believe that mental disorders are caused by mental weakness, 65% believe that mental disorders are the product of poor parenting, and 35% believe that mental disorders are a form of retribution for sinful or immoral behavior.¹⁹ Many stakeholders believe that the stigma against mental disorders plays a role in their lack of funding for research, their lack of parity in public and private health insurance coverage, and their lack of

¹³ National Institute of Mental Health, Statistics, available at <http://www.nimh.nih.gov/health/statistics/index.shtml> (last visited Jan. 29, 2008).

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ See, e.g., Keith Nelson, *Legislative and Judicial Solutions for Mental Health Parity: S. 543, Reasonable Accommodation, and an Individualized Remedy under Title I of the ADA*, 51 *AM. U. L. EV.* 91, 98 (2001); Brian K. LaFratta, *The Mental Health Parity Act: A Bar to Insurance Benefits for the Elderly?* 8 *ELDER L.J.* 393, 406 (2000).

¹⁸ See, e.g., Jeffery Fraser, Allegheny County Mental Health Court Project, Executive Summary 2 (Sept. 4, 2004), available at http://199.224.17.100/uploadedFiles/DHS/Individual_and_Community_Health/Mental_Health_Services_and_Support/Forensic_Services/MHCourtExecutiveSummary.pdf (last visited Jan. 21, 2008).

¹⁹ *Id.*

available and reimbursable treatments.²⁰ Four sets of mental disorders, including schizophrenia, bipolar disorder, drug and alcohol dependence, and anorexia nervosa and bulimia nervosa, are frequently used to illustrate these claims. Scientists have conducted hundreds of structural and functional neuroimaging studies investigating these conditions.²¹ A careful

²⁰ See, e.g., Pamela Signorello, *The Failure of the ADA-Achieving Parity with Respect to Mental and Physical Health Care Coverage in the Private Employment Realm*, 10 CORNELL J. L. & PUB. POL'Y 349, 368 (2001) ("Some diseases are more politically 'in' than others. We all know the more political backing there is, the more attention, the more funds, and the more patient-protection legislation. My guess is that if AIDS rates a 10, then breast cancer is a 7, prostate cancer is a 6 ... Yes, you guessed it. I am unable to assign a number to the mental health category. If I have to judge by the coverage in the popular press, the category is close the bottom of the food chain."); id. at 371 ("Contrary to lingering public perception, mental illnesses are not indicative of personal weakness, lack of character, or poor upbringing. One thing is certain. The stigma associated with mental illness has supported the disparity in health care coverage."); Nicole Martinson, *Inequality between Disabilities: The Different Treatment of Mental Versus Physical Disabilities in Long-Term Disability Benefit Plans*, 50 BAYLOR L. EV. 361, 361 (1998) ("The stigma of mental illness has kept many in need from seeking help, and it has prevented policymakers from providing it."); Brian D. Shannon, *Paving the Path to Parity in Health Insurance Coverage for Mental Illness: New Law or Merely Good Intentions?*, 68 U. COLO. L. EV. 63, 85 (1997) (citing 142 Cong. Rec. S3590 (daily ed. Apr. 18, 1996) (statement of Senator Wellstone)) ("The stigma of mental illness has kept many in need from seeking help, and it has prevented policymakers from providing it. And for too long, persons in need of mental health services who reach private coverage discriminatory limits have been dumped into Government-funded programs.").

²¹ See, e.g., Karen Faith Berman, *Functional Neuroimaging in Schizophrenia*, in NEUROPSYCHOPHARMACOLOGY: THE FIFTH GENERATION OF PROGRESS 745, 748 (Kenneth L. Davis et al. eds., 2002); Russell T. Loeber et al., *Differences in Cerebellar Blood Volume in Schizophrenia and Bipolar disorder*, 37 SCHIZOPHRENIA RESEARCH 81, 81 (1999); Robert B. Zipursky et al., *Widespread Cerebral Gray Matter Volume Deficits in Schizophrenia*, 49(3) Archives General Psychiatry 195 (1992); Raquel E. Gur et al., *Deconstructing Psychosis with Human Brain Imaging*, 33(4) SCHIZOPHRENIA BULLETIN 921, 922 (2007); Birgit Abler et al., *Abnormal Reward System Activation in Mania*, NEUROPSYCHOPHARMACOLOGY 1, 9–10 (2007); Jakub Z. Zonarski et al., *Volumetric Neuroimaging Investigations in Mood Disorders: Bipolar Disorder Versus Major Depressive Disorder*, 10 BIPOLAR DISORDERS 1 (2008); Jane Avery Serene et al., *Neuroimaging Studies of Children with Serious Emotional Disturbances: A Selective Review*, 52(3) CANADIAN J. PSYCHIATRY (2007); Yoshihide Akine et al., *Altered Brain Activation by a False Recognition Task in Young Abstinent Patients with Alcohol Dependence*, 31(9) ALCOHOLISM: CLINICAL & EXPERIMENTAL RESEARCH 1589 (2007); Joanna S. Fowler

review of these studies reveals many findings as well as many discrepancies and contradictions.²² Some of these studies do find that the brains of individuals affected by

et al., *Imaging the Addicted Brain, Imaging the Addicted Human Brain*, SCIENCE & PRACTICAL PERSPECTIVES 4 (2007); Andreas J. Bartsch et al., *Manifestations of Early Brain Recovery Associated with Abstinence from Alcoholism*, 130 BRAIN 36 (2007); Rita Z. Goldstein et al., *Role of the Anterior Cingulate and Medial Orbitofrontal Cortex in Processing Drug Cues in Cocaine Addiction*, 144(4) NEUROSCIENCE 1153 (2007); Sandra Chanraud et al., *Brain Morphometry and Cognitive Performance in Detoxified Alcohol-Dependents with Preserved Psychosocial Functioning*, 32 NEUROPSYCHOPHARMACOLOGY 429 (2007); Dardo Tomasi et al., *Thalamo-Cortical Dysfunction in Cocaine Abusers: Implications in Attention and Perception*, 155 PSYCHIATRY RESEARCH: NEUROIMAGING 189 (2007); G. Dom et al., *Substance Use Disorders and the Orbitofrontal Cortex*, 187 BRITISH J. PSYCHIATRY 209 (2005); Peter S. Kufahl et al., *Neural Responses to Acute Cocaine Administration in the Human Brain Detected by fMRI*, 28 NEUROIMAGE 904 (2005); Nikos Makris et al., *Decreased Absolute Amygdala Volume in Cocaine Addicts*, 44 NEURON 729 (2004); D.J. Meyerhoff et al., *Effects of Heavy Drinking, Binge Drinking, and Family History of Alcoholism on Regional Brain Metabolites*, 28(4) ALCOHOLISM: CLINICAL & EXPERIMENTAL RESEARCH 650 (2004); Clinton D. Kilts et al., *The Neural Correlates of Cue-Induced Craving in Cocaine-Dependent Women*, 161(2) AM. J. PSYCHIATRY 233 (2004); Andreas Heinz et al., *Correlation between Dopamine D Sub 2 Receptors in the Ventral Striatum and Central Processing of Alcohol Cues and Craving*, 161(10) AM. J. PSYCHIATRY 1783 (2004); Nora D. Volkow et al., *The Addicted Human Brain Viewed in the Light of Imaging Studies: Brain Circuits and Treatment Strategies*, 47 NEUROPHARMACOLOGY 3 (2004); Nora D. Volkow et al., *The Addicted Human Brain: Insights from Imaging Studies*, 111(10) J. CLINICAL INVESTIGATION 1444 (2003); A.R. Lingford-Hughes et al., *Addiction*, 65 BRITISH MED. BULLETIN 209 (2003); Ingrid Agartz et al., *MR Volumetry during Acute Alcohol Withdrawal and Abstinence: A Descriptive Study*, 38(1) ALCOHOL & ALCOHOLISM 71 (2003); Nora D. Volkow et al., *The Addicted Human Brain: Insights from Imaging Studies*, 111(10) J. CLINICAL INVESTIGATION 1444 (2002); Rita Z. Goldstein et al., *Drug Addiction and Its Underlying Neurobiological Basis: Neuroimaging Evidence for the Involvement of the Frontal Cortex*, 159(10) AM. J. PSYCHIATRY 1642 (2002); Stephen J. Uftring et al., *An fMRI Study of the Effect of Amphetamine on Brain Activity*, 25(6) NEUROPSYCHOPHARMACOLOGY 925 (2001); Bruce E. Wexler et al., *Functional Magnetic Resonance Imaging of Cocaine Craving*, 158(1) AM. J. PSYCHIATRY 86 (2001); R.S.N. Liu et al., *Association between Brain Size and Abstinence from Alcohol*, 355 (9219) LANCET 1969 (2000); Daniel W. Homer, *Functional Imaging of Craving*, ALCOHOL RESEARCH & HEALTH (Fall 1999); Mark Mühlau et al., *Gray Matter Decrease of the Anterior Cingulate Cortex in Anorexia Nervosa*, 164(12) AM. J. PSYCHIATRY 1850 (2007); E.K. Lambe et al., *Cerebral Gray Matter Volume Deficits after Weight Recovery from Anorexia Nervosa*, 54(6) ARCHIV. GENERAL PSYCHIATRY 537 (1997); Angela Wagner et al., *Altered Reward Processing in Women Recovered from Anorexia Nervosa*, 164(12) AM. J. PSYCHIATRY

these conditions are anatomically, cognitively, and/or chemically “different” when compared to the brains of healthy controls.²³ In the past twenty years, stakeholders have referenced these findings in an attempt to influence health law and policy, especially the scope of private and public health insurance benefits.

The Scope of Health Insurance Benefits

Most Americans with private health insurance receive coverage through their employers as a benefit of employment.²⁴ When employers first began offering health insurance benefits,²⁵ covered employees generally had access to physical and mental health benefits under the same terms and conditions.²⁶ Beginning in the 1970s, many employers reduced their mental health benefits, which were thought to be more expensive than physical health benefits.²⁷ The Jackson Hole Group, an influential body of health care executives and policy analysts, even recommended that employers limit their mental health benefits to twenty outpatient visits and thirty inpatient days each year.²⁸ Some employers also increased deductibles and lowered lifetime and daily limits applicable to mental health care.²⁹

1842 (Dec. 2007); Ursula F. Bailer et al., *Exaggerated 5-HT1A but Normal 5-HT2A Receptor Activity in Individuals Ill with Anorexia Nervosa*, 61(9) *BIOLOGICAL PSYCHIATRY* 1090 (May 1, 2007); Ursula F. Bailer et al., *Altered Brain Serotonin 5-HT1A Receptor Finding after Recovery from Anorexia Nervosa Measured by Positron Emission Tomography*, 62(9) *ARCHIVES GENERAL PSYCHIATRY* 1032 (2005); G.K. Frank et al., *Reduced 5-HT2A Receptor Binding after Recovery from Anorexia Nervosa*, 52(9) *BIOLOGICAL PSYCHIATRY* 896 (Nov. 1, 2002); Walter H. Kaye et al., *Altered Serotonin 2A Receptor Activity in Women Who Have Recovered from Bulimia Nervosa*, 158(7) *AM. J. PSYCHIATRY* 1152 (2001).

²² See, e.g., Russell T. Loeber et al., *Differences in Cerebellar Blood Volume in Schizophrenia and Bipolar Disorder*, 37 *SCHIZOPHRENIA RESEARCH* 81, 81 (1999).

²³ See, e.g., Richard E. Gardner, *Mind Over Matter? The Historical Search for Meaningful Parity Between Mental and Physical Health Care Coverage*, 49 *EMORY L.J.* 675, 683 (2000) (quoting Fuller Torrey, one of America’s most famous psychiatrists: “[T]he evidence is now overwhelming that the brains of persons who have schizophrenia are, as a group, different from brains of persons who do not have the disease.”); Karen Faith Berman, *Functional Neuroimaging in Schizophrenia*, in *NEUROPSYCHOPHARMACOLOGY: THE FIFTH GENERATION OF PROGRESS* 745, 747 (Kenneth L. Davis et al. eds., 2002); Philip McGuire et al., *Functional Neuroimaging in Schizophrenia: Diagnosis and Drug Discovery*, *TRENDS IN PHARMACOLOGICAL SCIENCES* 1, 6 (IN PRESS, 2008) (ON FILE WITH AUTHOR).

These benefit package changes resulted in a disparity between the private insurance coverage that was provided for employees’ physical illnesses and mental disorders.³⁰ Health insurance plans that covered 365 days of inpatient care for physical illnesses might cover only 45 days of inpatient care for mental disorders.³¹ Plans that provided unlimited outpatient visits for treatment of physical illnesses might allow only 20 outpatient visits for treatment of mental disorders.³² And plans that contained a \$1 million lifetime cap for treatment of physical illnesses might contain only a \$50,000 lifetime cap for treatment of mental disorders.³³ These coverage disparities adversely affected individuals with mental disorders. Many individuals with disabling bipolar disorder and severe anorexia nervosa were forced to discontinue their inpatient and outpatient treatments when they had reached their mental health benefit caps.³⁴ The lack of treatment exacerbated underlying illnesses and symp-

²⁴ See, e.g., Nelson, *supra* note 17, at 93.

²⁵ See, e.g., PAUL STARR, *THE SOCIAL TRANSFORMATION OF AMERICAN MEDICINE: THE USE OF A SOVEREIGN PROFESSION AND THE MAKING OF A VAST INDUSTRY* 294–95 (1949) (discussing early examples of employer-based health insurance).

²⁶ Dana L. Kaplan, *Can Legislation Alone Solve America’s Mental Health Dilemma? Current State Legislative Schemes Cannot Achieve Mental Health Parity*, 8 *QUINNIPIAC L.J.* 325, 328 (2005).

²⁷ See, e.g., Allan Beigel & Steven S. Sharfstein, *Mental Health Care Providers: Not the Only Cause or Only Cure for Rising Costs*, 142(5) *AM. J. PSYCHIATRY* 668 (May 1984) (“In 1955 mental health expenditures were estimated to be \$1.2 billion, or 6% of all expenditures. By 1977 the total amount of expenditures for mental health care had risen to \$19.6 billion, 12% of all expenditures. Even with a correction for population growth and price increases, this amounts to a fourfold increase in mental health expenditures.”); Kaplan, *supra* note 26, at 328 (mental health benefits are two to three times as expensive as physical illness benefits).

²⁸ See Robert Pear, *White House Plan Would Cover Costs of Mental Illness*, *N.Y. TIMES*, Mar. 16, 2003, at A1.

²⁹ See, e.g., Beigel & Sharfstein, *supra* note 27, at 668 (“Costs have risen, resulting in resistance to financing treatment of mental illness in both public and private sectors.”); Kaplan, *supra* note 26, at 328.

³⁰ See, e.g., Kaplan, *supra* note 26, at 328.

³¹ See Shannon, *supra* note 20, at 68.

³² See *id.*

³³ See *id.*

³⁴ See, e.g., Beth A. Brunalli, *Anorexia Killed Her; but the System Failed Her: Does the American Insurance System Suffer from Anorexia*, 12 *CONN. INS. L. J.* 583, 591 (2005/2006).

toms, sometimes leading to unemployment, homelessness, incarceration, and premature death.³⁵

In the late 1980s and early 1990s, some patients who were denied additional mental health benefits sued their insurers, arguing that their conditions were physical rather than mental in nature and thus covered under the “better” set of benefits.³⁶ In these contract-based lawsuits, the plaintiffs’ experts routinely referenced advances in the behavioral and brain sciences to support their testimony. In a 1987 case out of Arkansas, for example, an insured father sued Blue Cross Blue Shield (BCBS) when it denied additional benefits to his dependent daughter, who had a diagnosis of bipolar affective disorder.³⁷ The BCBS plan at issue provided liberal benefits for hospitalization and medical treatment for physical illnesses and accidental injuries, but only limited benefits for “mental, psychiatric, and nervous conditions,” which the plan did not define.³⁸ At trial, the father called three psychiatrists and two clinical psychologists to testify that bipolar disorder is a physical disease of the brain.³⁹ The experts referenced advances in “medical research” to support their testimony that bipolar affective disorder is an illness of the brain that stems from physical and biological causes.⁴⁰ The court ultimately agreed that the daughter’s illness was a physical condition within the meaning of the BCBS plan,⁴¹ but the victory was short-lived.⁴² Following the decision, BCBS re-wrote its Arkansas policy and clarified that the coverage

limitation for psychiatric conditions applied whether the condition was “organic or non-organic, whether of biological, non-biological, chemical or non-chemical origin, and irrespective of cause, basis or inducement.”⁴³

Some courts focus not on the origin of the plaintiff’s condition but on the ways in which the plaintiff’s condition manifests itself. In a 1989 case out of California, a plaintiff who became totally disabled as a result of his bipolar disorder sued his insurance company for both long-term disability benefits and medical benefits.⁴⁴ The long-term disability plan expressly excluded coverage for “mental and nervous disorders.”⁴⁵ The medical plan stated that it would pay only 50% of physician charges for “mental and/or nervous treatment,” which the plan defined as “treatment for a neurosis, psycho-neurosis, psychopathy, psychosis, or mental or nervous disease or disorder of any kind.”⁴⁶ At trial, the plaintiff called an expert witness who testified that the plaintiff’s disorder was an organic disease caused by a chemical imbalance and other physiological disease processes.⁴⁷ The court, taking judicial notice of the then-current edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM), which listed bipolar disorder as a mental disorder,⁴⁸ disagreed, stating that the test was whether the manifestation, not the origin, of the disorder was mental or physical in nature.⁴⁹ Because the plaintiff’s disorder manifested itself in very high moods and very low moods, the court classified his disorder as a mental disorder.⁵⁰

In 1990, the Eighth Circuit also focused on symptoms, reasoning that most laypersons understand

³⁵ See, e.g., John V. Jacobi, *Parity and Difference: The Value of Parity Legislation for the Seriously Mentally Ill*, 29 AM J. L. & MED. 185, 185 (2003); Nelson, *supra* note 17, at 99.

³⁶ See, e.g., Brunalli, *supra* note 34, at 598.

³⁷ *Arkansas Blue Cross and Blue Shield, Inc. v. Doe*, 733 S. W.2d 429, 431 (1987).

³⁸ *Id.* at 430.

³⁹ *Id.* at 430–31.

⁴⁰ *Id.* at 431 (“Dr. Thomas Harris, a treating psychiatrist... stated it is in fact a physical disorder. ‘The medical research is now, in my opinion, overwhelming in that regard.’ He stated that it was an illness of the brain and body rather than of the mind and stemmed from a chemical imbalance which responds to medication. This illness, like many others he described, manifest some behavioral or emotional disturbances, but the causes of those manifestations are physical and biological in nature as distinguished from mental.”).

⁴¹ *Id.* at 432.

⁴² Shannon, *supra* note 20, at 76.

⁴³ *Id.*

⁴⁴ *Equitable Life Assurance Society v. Berry*, 212 Cal. App.3d 832, 834–35 (1989).

⁴⁵ *Id.* at 835.

⁴⁶ *Id.*

⁴⁷ *Id.* at 839–40.

⁴⁸ *Id.* at 840.

⁴⁹ *Id.* (“Every reasonable layman would view a person manifesting such derangement as suffering from a mental disease. The policies here in question exclude all mental disease from coverage... regardless of whether the disability was caused by a chemical imbalance, a blow on the head, being frightened by a black cat, inability to cope or whatever... In the disability policy, mental disorders are expressly “not covered.” Period.... Manifestation, not cause, is the yardstick.”).

⁵⁰ *Id.* at 839–40.

illnesses in terms of their symptoms, not their origin. In the Eighth Circuit case, an insured father sued Lincoln National Life Insurance Company when it denied additional benefits to his dependent son, who had an affective mood disorder that manifested itself in a sharp decline in grades, repeated incidents of lying, mood swings, and aberrant behavior in and out of school.⁵¹ One of the applicable insurance plans limited coverage for hospital charges associated with “mental illness(es), functional nervous disorder(s)... or for psychiatric or psychoanalytic care.”⁵² A second applicable plan limited coverage for the care of “mental illness(es).”⁵³ Neither plan defined mental illness.⁵⁴ At trial, the father called three physicians of various specialties to testify that “mounting evidence suggest[s] that affective mood disorder is genetically or biologically caused.”⁵⁵ Notwithstanding, the

⁵¹ *Brewer v. Lincoln National Life Insurance Company*, 921 F.2d 150, 152, 154 (1990).

⁵² *Id.* at 152.

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ *Id.* at 153–154 (“The cause of a disease is a judgment for experts, while laymen know and understand symptoms. Laymen undoubtedly are aware that some mental illnesses are organically caused while others are not; however, they do not classify illnesses based on their origins. Instead, laypersons are inclined to focus on the symptoms of an illness; illnesses whose primary symptoms are depression, mood swings and unusual behavior are commonly characterized as mental illnesses regardless of their cause... [The son’s] disease manifested itself in terms of mood swings and aberrant behavior. Regardless of the cause of his disorder, it is abundantly clear that he suffered from what laypersons would consider to be a ‘mental illness.’”).

⁵⁷ See, e.g., *Lynd v. Reliance Standard Life Ins. Co.*, 94 F.3d 979, 983–984 (5th Cir. 1996); “Laypersons are inclined to focus on the symptoms of an illness; illnesses whose primary symptoms are depression, mood swings and unusual behavior are commonly characterized as mental illness regardless of their cause.”); *Tolson v. Avondale Indus., Inc.*, 141 F.3d 604, 610 (5th Cir. 1998); same; depression therefore is a mental illness); *Pelletier v. Fleet Fin. Group*, 2000 WL 1513711 (D.N.H. 2000); same; major depressive disorder therefore is a mental illness); *Attar v. Unum Life Ins. Co.*, 1997 WL 446439 (N.D. Tex. 1997); same; bipolar disorder therefore is a mental illness).

⁵⁸ *Fitts v. Unum Life Ins. Co.*, 2006 U.S. Dist. LEXIS 9235, *12 (2006) (“[The insured] alleges that the term ‘mental illness’ should be defined to exclude any ailment that has a physical or biological basis. Pursuant to that definition, she maintains that her sickness, bipolar disorder, is not a mental illness because it has physical, biological, and genetic components.”).

Eighth Circuit found that the son’s affective mood disorder was a mental illness subject to the more limited coverage because symptoms, not origin, mattered, and because most laypersons would agree that the symptoms of affective mood disorder are behavioral, rather than physical, in nature.⁵⁶ Other American courts have adhered to the same layperson standard en route to ruling in favor of the insurer.⁵⁷

Finally, in a pair of decisions issued in 2006 and 2007 the United States District Court for the District of Columbia addressed several questions relating to the insurance coverage of bipolar disorder. The issue before the District Court in the 2006 decision was whether bipolar disorder, if proved by the patient, would be subject to the mental illness cap set forth in the defendant’s disability insurance policy.⁵⁸ The plaintiff called a physician to testify that bipolar disorder is a neurobiological disorder that affects the physical and chemical structures of the brain.⁵⁹ The insurer, on the other hand, contended that bipolar disorder is a mental illness subject to the lower benefit caps because bipolar disorder is included within the DSM-IV’s classification of mental disorders⁶⁰ (even though the DSM-IV acknowledges that no good distinction between physical and mental disorders exists⁶¹). In the end, the District Court construed the

⁵⁹ *Id.* at *12–*13 (“[The witness] explains that it may be characterized by certain physical occurrences, including degenerative changes observed in the brain, and a progressive loss of hippocampal cells in the brain. In addition, he stated that depressive episodes associated with bipolar disorder are generally accompanied by large outpourings of corticosteroids (stress hormones) from the adrenal gland, which are damaging to a number of areas of the brain... [He] ultimately concludes that bipolar disorder is a physical illness because it is a disease afflicting a physical organ of the body, just like diseases affecting the heart, the kidneys, or the liver.”).

⁶⁰ *Id.* at *15.

⁶¹ AMERICAN PSYCHIATRIC ASSOCIATION, *DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS*, Fourth Edition xxx (4th ed., Text Rev., 2000); “Although this volume is titled the *Diagnostic and Statistical Manual of Mental Disorders*, the term mental disorder unfortunately implies a distinction between ‘mental’ disorders and ‘physical’ disorders that is a reductionistic anachronism of mind/body dualism. A compelling literature documents that there is much ‘physical’ in ‘mental’ disorders and much ‘mental’ in ‘physical’ disorders. The problem raised by the term ‘mental’ disorders has been much clearer than its solution, and, unfortunately, the term persists in the title of the DSM-IV because we have not found an appropriate substitute....”).

definition of mental illness against the insurer and held that bipolar disorder was covered under the better set of benefits.⁶²

The issue before the District Court in the 2007 opinion was whether the plaintiff actually had bipolar disorder.⁶³ The insurer first contended that the plaintiff did not have bipolar disorder because no brain scans showed any changes in the plaintiff's brain; then, the insurer conceded that brain scans cannot yet diagnose bipolar disorder.⁶⁴ Lawyers frequently make strong arguments followed by concessions and engage in alternative argumentation. This kind of zealous advocacy may confuse the court because it first validates and then invalidates the underlying neuroimaging technology. In the end, the District Court ruled in favor of the plaintiff.⁶⁵

Since the time of these cases Congress and many State legislatures have passed laws that require some health insurance plans to provide some parity in their coverage of physical and mental health conditions. For those health insurance plans that are not regulated by a federal or state parity law, including public programs such as the Medicare and Medicaid Programs,⁶⁶ and for regulated insurance plans based in states with incomplete parity laws, the outcome of a plaintiff's case against the insurer for the better set of benefits will depend on whether and how the plan defines mental disorder and how the court interprets either the definition or the undefined phrase.

⁶² *Fitts*, 2006 U.S. Dist. LEXIS 9235, at *24-*25.

⁶³ *Fitts v. Unum Life Ins. Co.*, 2007 U.S. Dist. LEXIS 33397, *2 (2007).

⁶⁴ *Id.* at *25.

⁶⁵ *Id.* (“Although bipolar disorder is an organic disorder associated with physiological changes in the brain, there is no test that reveals or confirms the diagnosis of bipolar disorder, and [the plaintiff] cannot be required to produce what does not exist in order to prevail.”).

⁶⁶ See, e.g., Brunalli, *supra* note 34, at 622 (discussing the non-application of many state parity laws to public health insurance programs); TREATMENT ADVOCACY CENTER, MEDICAID DISCRIMINATION AGAINST PEOPLE WITH SEVERE MENTAL ILLNESSES, available at <http://www.psychlaws.org/GeneralResources/fact12.htm> (last visited Feb. 3, 2008) (“While the federal government seeks ‘parity’ for treatment of lesser forms of mental illness by private insurers, it continues to discriminate against those with severe mental illnesses by denying them coverage under Medicaid when they require hospitalization in a psychiatric hospital.”).

One question is whether and how advances in neuroscience, including structural and functional neuroimaging, will impact the scope of insurance coverage disputes. Based on litigants' liberal use of psychiatric, psychological, and neuroimaging evidence to support brain-based claims starting in the late 1980s, as well as stakeholders' use of neuroimaging evidence in mental health parity debates and disability claim proceedings, as discussed in more detail below, I would anticipate plaintiffs' continued use of the behavioral and brain sciences to argue that certain mental disorders are biological in nature and, therefore, deserving of benefits applicable to physical illnesses. Given decisions in cases such as *Arkansas Blue Cross and Blue Shield, Inc. v. Doe*,⁶⁷ which found that bipolar disorder was an illness of the brain that stemmed from physical and biological causes,⁶⁸ I also anticipate that plaintiffs' neuroscience-based claims may have some success in jurisdictions that look to the cause or origin of the plaintiff's disorder, especially if the disorder is one of the better known DSM-IV axis 1 clinical disorders (such as schizophrenia or bipolar disorder), or axis 3 general medical conditions that plays a role in the development, continuance, or exacerbation of an axis 1 or 2 disorder (such as a brain injury or AIDS that can result in symptoms of mental illness).

In cases involving other mental disorders, I suspect that the outcome will depend on whether that jurisdiction focuses on origin, treatment, manifestation, or symptoms,⁶⁹ as well as whether the “first impression” symptoms are physical (e.g., starvation and dehydration symptoms of an eating disorder) or behavioral (e.g., delusions and hallucinations associated with schizophrenia) and, if behavioral, the ability of the plaintiff's experts to convince the jury that such behavior is brain-based. Given the ready (Internet) availability of neuroimaging studies finding that emotion may be correlated with blood oxygenation level dependent (BOLD) activity in the limbic

⁶⁷ *Arkansas Blue Cross and Blue Shield, Inc. v. Doe*, 733 S. W.2d 429 (1987).

⁶⁸ *Id.* at 431.

⁶⁹ See, e.g., *Phillips v. Lincoln National Life Ins. Co.*, 978 F.2d 302, 310–11 (7th Cir. 1992) (noting that different jurisdictions use competing definitions of mental illness); *Fitts*, 2006 U.S. Dist. LEXIS 9235, at *21 (noting that the courts have relied on at least five different approaches for defining mental illness).

system,⁷⁰ attention may be correlated with BOLD activity in the right caudate nucleus and globus pallidus,⁷¹ motor activity may be correlated with BOLD activity in the primary motor cortex,⁷² perception may be correlated with changes in the sensory association cortex,⁷³ working memory may be correlated with BOLD activity in the prefrontal cortex,⁷⁴ and so on.⁷⁵ I do anticipate that aggressive plaintiffs may try to argue the brain-basis of the many signs and symptoms of mental illness, including those relating to emotion (e.g., depression, mania, anxiety and flat affect), consciousness (e.g., decreased attention span, disorientation, and delirium), motor behavior (e.g., underactivity, overactivity, and compulsive movements), perception (e.g., auditory and visual hallucinations and other distortions of real events), long- and short-term memory impairments, speech, insight, and thinking (including thoughts of persecution or Apocryphal doom).⁷⁶ I also anticipate that defendant insurers may respond by arguing either that mental disorders cannot yet be diagnosed by a brain scan or that the plaintiff failed to introduce a brain scan that would have provided objective evidence of a mental disorder.⁷⁷

How should we assess these neuroscience-based claims? Scholars already have laid the groundwork

for evaluating claims made about fMRI-lie detectors in terms of meeting relevance and reliability requirements set forth in civil and criminal rules of evidence.⁷⁸ In scope-of-insurance lawsuits involving functional neuroimaging evidence, litigants very well may have similar evidentiary defenses based on many of the same relevancy and reliability problems. These include underlying problems with the theory of neurovascular coupling, the time lag associated with blood flow, the localization of neuronal activity, the statistical averaging of images, paired image subtraction, subject selection, the number of subjects and implications for statistical significance, as well as broader philosophical concerns relating to the inherent sociocultural and historical subjectivity of diagnosing and classifying psychiatric conditions.⁷⁹ A review of structural and functional neuroimaging studies involving individuals with mental disorders reveals several additional limitations, including the effect that different psychotropic drug regimens, alcohol and illegal drug use cigarette smoking, endocrine changes, nutrition differences, and activity levels have for study results, as well as the extent to which the duration and severity of the subjects' mental illnesses may have contributed to the magnitude of any structural changes or functional differences identified during the study.⁸⁰ Finally, insurers also have a range of substantive and normative defenses; that is, that

⁷⁰ NEIL R. CARLSON, *PHYSIOLOGY OF BEHAVIOR* 335 (6th ed. 1998).

⁷¹ J.M. De La Fuente et al., *Brain Glucose Metabolism in Borderline Personality Disorder*, 31 J. PSYCHIATRIC ES. 531–41 (1997).

⁷² CARLSON, *supra* note 70, at 234.

⁷³ *Id.* at 437.

⁷⁴ *Id.*

⁷⁵ Brian Doherty, 'You Can't See Why on fMRI': *What Science Can and Cannot Tell Us about the Insanity Defense*, EASON ONLINE, July 2007, available at <http://www.reason.com/news/show/120266.html> (last visited Feb. 4, 2008) (noting the frequency with which expert witnesses testify in legal proceedings and reclassify complicated moral and legal questions as seemingly clear-cut, brain-based, scientific matters.).

⁷⁶ See, e.g., Dawn Capp & Joan G. Esnayra, *It's All in Your Head—Defining Psychiatric Disabilities as Physical Disabilities*, 23 T. JEFFERSON L. EV. 97, 106–114 (2000) (examining the neuroanatomical, neurochemical, and genetic correlates of the signs and symptoms of many mental disorders).

⁷⁷ See *Fitts*, 2007 U.S. Dist. LEXIS, at *25 ("Unum contends that [the plaintiff] does not have bipolar disorder because there are no brain studies showing changes in her brain. Yet Unum concedes that bipolar disorder 'cannot be diagnosed with a brain scan.'") (internal references omitted).

⁷⁸ See, e.g., Mark Pettit, *fMRI and BF Meet FRE: Brain Imaging and the Federal Rules of Evidence*, 33 AM. J. L. & MED. 319 (2007); Leo Kittay, *Admissibility of fMRI Lie Detection: The Cultural Bias against "Mind Reading" Devices*, 72 BROOKLYN L. EV. 1351 (2007); Erin A. Egan, *Neuroimaging as Evidence*, 7(9) AM. J. BIOETHICS-NEUROSCIENCE 62 (2007); Jocelyn Downie & RONALDA MURPHY, *Inadmissible, Eh?* 7(9) AM. J. BIOETHICS-NEUROSCIENCE 67 (2007); Charles N. W. Keckler, *Cross-Examining the Brain: A Legal Analysis of Neural Imaging for Credibility Impeachment*, 57 HASTINGS L.J. 509 (2006); Archie Alexander, *Functional Magnetic Resonance Imaging Lie Detection: Is a "Brainstorm" Heading for the Gatekeeper?* 7 HOUSTON J. HEALTH L. & POL'Y 1 (2006).

⁷⁹ See, e.g., Grace E. Jackson, *A Curious Consensus: "Brain Scans Prove Disease?"*, L. PROJECT PSYCHIATRIC TS., available at <http://psychrights.org/Articles/GEJacksonMDBrainScanCuriousConsensus.pdf> (last visited Feb. 5, 2008; discussing limitations on the use of functional neuroimaging for psychiatric diagnosis).

⁸⁰ See, e.g., Robert B. Zipursky, *Imaging Mental Disorders in the 21st Century*, 52 CANADIAN J. PSYCHIATRY 133, 133 (2007).

statutory cost containment,⁸¹ lack of medical necessity,⁸² and other reasons justify a coverage refusal regardless of the merit of the neuroscience-based claim.

Finally, I anticipate that increased public understanding of the behavioral and brain sciences may impact the application of the layperson standard in jurisdictions that follow it. Remember the Eighth Circuit case in which the court stated that the test of whether a condition is physical or mental depends on how a reasonable layperson would understand or perceive the condition?⁸³ That case was decided in 1990, at the beginning of the United States' Decade of the Brain,⁸⁴ when the average American may not have known too much about the causes or effects of mental disorders. In the eighteen years since then, the American public has been inundated with information regarding the treatable organic basis of many mental disorders. On March 16, 1993, the *New York Times*

made public the findings of a confidential government report exploring health reform for individuals with mental disorders.⁸⁵ The report, authored by the National Advisory Mental Health Council, stated that, "contrary to persistent myth, mental illnesses are both real and definable"⁸⁶ and that "the efficacy of an extensive array of treatments for specific mental disorders has been systematically tested in controlled clinical trials [and] demonstrate[s] that mental disorders can now be diagnosed and treated as precisely and effectively as are other disorders in medicine."⁸⁷ Stephen Hyman, former Director of the NIMH, referenced several neuroimaging studies when he told Congress in 1996 that mental disorders are diseases of the brain:

[T]he accumulating weight of the evidence and the great bulk of it resulting from NIMH-sponsored research demonstrates that mental disorders are brain diseases.... We know that individuals with schizophrenia have abnormalities in the size of their cerebral ventricles, those fluid-filled cavities in the brain; simply put, in schizophrenia, we see irregularities in the ratio of brain tissue to fluid in the brain. NIMH-sponsored research also has provided compelling evidence that the connections of nerve cells in the brain, the circuits that underlie the processing of thoughts and emotions, do not develop or function normally in patients with schizophrenia... [Current] scientific techniques demonstrate beyond doubt that schizophrenia is a primary brain disorder."⁸⁸

⁸¹ See, e.g., Mental Health Parity Act of 1996, *codified at* 29 U.S.C. § 1185a(C)(2) (allowing insurers to opt out of parity if parity raises overall plan costs by more than one percent); Mental Health Parity Act of 2007, S. 558, 110th Cong., § 712a (e)(1) and (2) (Sept. 19, 2007) (exempting from parity group health plans "whose compliance would increase total costs by more than 2% during the first year or by more than 1% each subsequent year").

⁸² See, e.g., William M. Glazer, *Psychiatry and Medical Necessity*, 22(7) *PSYCHIATRIC ANNALS* 362 (1992) (discussing insurers' application of the medical necessity requirement in the context of reimbursement for treatment of psychiatric conditions; identifying key factors that underlie the concept of medical necessity in psychiatric practice); Nancy W. Miller, *What Is Medical Necessity?*, *PHYSICIAN'S NEWS DIGEST* (Aug. 2002) ("[There are] as many definitions of medical necessity as there are payors, laws, and courts to interpret them. Generally speaking, though, most definitions incorporate the principle of providing services which are 'reasonable and necessary' or 'appropriate' in light of clinical standards of practice.... Medicare defines 'medical necessity' as services or items reasonable and necessary for the diagnosis or treatment of illness or injury or to improve the functioning of a malformed body member. While that sounds like a hard and fast rule, consider that CMS (formerly HCFA) has the power under the Social Security Act to determine if the method of treating a patient in the particular case is reasonable and necessary on a case-by-case basis."); Sabin & Daniels, *supra* note 10, at 5 (examining medical necessity in the context of mental health care).

⁸³ *Brewer*, 921 F.2d at 153–154 ("[L]aypersons are inclined to focus on the symptoms of an illness; illnesses whose primary symptoms are depression, mood swings and unusual behavior are commonly characterized as mental illnesses regardless of their cause...").

⁸⁴ U.S. Library of Congress, Project on Decade of the Brain, available at <http://www.loc.gov/loc/brain/> (last visited Jan. 30, 2008).

⁸⁵ Robert Pear, *White House Plan Would Cover Cost of Mental Illness*, N.Y. TIMES, Mar. 16, 1993, at A1 (citing National Advisory Mental Health Council, *Health Care Reform for Americans with Severe Mental Illnesses*, 150 AM. J. PSYCHIATRY 1447 (1993)).

⁸⁶ *Id.* at A1.

⁸⁷ National Advisory Mental Health Council, *Health Care Reform for Americans with Severe Mental Illnesses: Report of the National Advisory Mental Health Council*, 150 AM. J. PSYCHIATRY 1447, at Abstract (1993).

⁸⁸ Hearing before the Subcomm. on Labor, Health & Human Serv., Educ. & Related Agencies of the House Comm. on Appropriations, 104th Cong. 363, 375 (1996) (statement of Stephen Hyman, Director, Nat'l Inst. Mental Health, Department of Health & Human Servs).

In 1999, Surgeon General David Satcher released an influential report in which he referenced research in basic neuroscience, behavioral science, and behavioral genetics to support the characterization of mental disorders as “real health conditions” for which “a range of treatments exist.”⁸⁹ And, since 1999, the public has been overwhelmed with television, print, radio, and electronic news regarding advances in neuroimaging, neurointerventions, and the behavioral and brain sciences.⁹⁰ “An endless stream of news stories about the latest advances in brain scans and the chemical conquest of personality enhances the experts’ credibility and feeds into a belief that we have come to a sophisticated understanding of the intersection between mind, brain, and behavior.”⁹¹ As the public continues to receive this information, I suspect the application of the reasonable layperson test in health insurance coverage disputes may begin to swing in favor of plaintiffs who claim that their mental disorders are physical in nature.⁹²

The Mental Health Parity Debate

In the early 1990s, many stakeholders began to lobby Congress and State legislatures for health insurance parity, reasoning that there is no biological justification for the unequal insurance coverage of mental and physical conditions by health insurance plans.⁹³ Insurers responded with a multi-layered cost-contain-

ment defense. By limiting mental health coverage, insurers claimed they could reduce costs, maintain premium levels, and cover more individuals.⁹⁴ Insurers also claimed that increased mental health benefits would give rise to adverse selection (that is, that consumers with mental health conditions that required expensive treatments would select those plans that provided coverage for such treatments).⁹⁵ Insurers also expressed concern that consumers’ demand for mental health treatment would be highly responsive to the presence of insurance coverage⁹⁶ and that consumers would seek treatment and reimbursement for “frivolous” emotional conditions and other mental disorders characterized by diagnostic ambiguity and uncertain treatment success.⁹⁷ The Commerce and Industry Association of New Jersey opposed legislative efforts to expand mental health benefits in the State of New Jersey for fear that the legislation “would uncover unworthy disorders such as shyness, boastfulness, fetishism, and impulsiveness.”⁹⁸ The New Jersey Business and Industry Association similarly worried that the legislation would require insurers to cover less serious mental disorders listed in the DSM-IV, including “sibling relational problems and caffeine addiction.”⁹⁹ Stakeholders in favor of

⁸⁹ U.S. DEPARTMENT HEALTH & HUMAN SERVS., MENTAL HEALTH: A REPORT OF THE SURGEON GENERAL, Executive Summary vii (1999), available at <http://www.surgeongeneral.gov/library/mentalhealth/summary.html> (last visited Feb. 2, 2008) (“The U.S. Congress declared the 1990s the Decade of the Brain. In this decade we have learned much through research—in basic neuroscience, behavioral science, and genetics—about the complex workings of the brain. Research can help us gain a further understanding of the fundamental mechanisms underlying thought, emotion, and behavior—and an understanding of what goes wrong in the brain in mental illness. It can also lead to better treatments and improved services for our diverse population....”).

⁹⁰ See, e.g., Jason Pontin, *Mind Over Matter, with a Machine’s Help*, N.Y. TIMES, Aug. 26, 2007, at F3; Sandra Blakeslee, *A Small Part of the Brain and Its Profound Effects*, N.Y. TIMES, Feb. 6, 2007, at F6; Sandra Blakeslee, *Just What’s Going on Inside that Head of Yours?* N.Y. TIMES, Mar. 14, 2000, at F6; Holcomb B. Noble, *Pain at Work: Startling Images and New Hope*, N.Y. TIMES, Aug. 10, 1999, at F1.

⁹¹ Doherty, *supra* note 75.

⁹² Shannon, *supra* note 20, at 75.

⁹³ See, e.g., Nelson, *supra* note 17, at 99 (“Nowhere is the gap between science and society more pronounced than in health benefit coverage for mental illness.”); LaFratta, *supra* note 17, at 406 (same); Kaplan, *supra* note 26, at 328 (same).

⁹⁴ See, e.g., Jacobi, *supra* note 35, at 186 (“Resistance to such legislation centers on concerns over cost, diagnostic and prognostic indeterminacy, and ambiguity at the line dividing medical from non-medical treatments important to the seriously mentally ill.”); Maggie D. Gold, *Must Insurers Treat All Illnesses Equally?—Mental vs. Physical Illness: Congressional and Administrative Failure to End Limitations to and Exclusions from Coverage for Mental Illness in Employer-Provided Health Benefits under the Mental Health Parity Act and the Americans with Disabilities Act*, 4 CONN. INS. L. J. 767, 773 (1997/1998) (same).

⁹⁵ See, e.g., Gold, *supra* note 94, at 774–77 (1997/1998) (applying theories of moral hazard to mental health insurance coverage); LaFratta, *supra* note 17, at 405 (same).

⁹⁶ See, e.g., Jonathan Klick & Thomas Stratmann, *Subsidizing Addiction: Do State Health Insurance Mandates Increase Alcohol Consumption?*, 35 J. LEGAL STUD. 175, 176 (2006).

⁹⁷ See, e.g., Gold, *supra* note 94, at 774–77; LaFratta, *supra* note 17, at 405.

⁹⁸ See Kaplan, *supra* note 26, at 338, n. 97.

⁹⁹ See *id.* at 338, n. 98.

mental health parity responded by offering evidence that the diagnosis and treatment of mental disorders is precise, effective, and successful.¹⁰⁰

By the mid-1990s, proponents of mental health parity had achieved some success at the federal and State level.¹⁰¹ At the federal level, Congress passed the Mental Health Parity Act of 1996 (the 1996 MHPA), which required group health plans offering a mental health benefit in conjunction with medical and surgical benefits to provide equality for any annual or lifetime aggregate spending caps imposed within the plan.¹⁰² A regulated group health plan that offered a lifetime cap of \$1 million for treatment for physical illnesses, for example, would be required to establish a \$1 million cap for treatment of mental disorders. The 1996 MHPA did not require covered health plans to actually offer a mental health benefit,¹⁰³ nor did it prohibit covered plans from imposing higher copayments or deductibles for mental health services, different limits on numbers of visits or days of coverage, or otherwise establishing different cost-sharing ratios.¹⁰⁴ Thus, a regulated group health plan could reimburse a patient 100% of the cost of a visit to an orthopedic surgeon, but only 50% of the cost of a visit to a psychiatrist.¹⁰⁵

Mental health parity continues to be an issue at the federal level. As of early 2008, there are competing versions of a new mental health parity bill in the House of Representatives and the Senate.¹⁰⁶ Some mental health advocates believe that the new legislation, if passed, will represent a substantial improvement over the 1996 MHPA. One Senate version, for example, extended the federal parity mandate to deductibles, coinsurance, and the number of visits each year.¹⁰⁷ This Senate version did not require

regulated group health plans to offer a mental health benefit¹⁰⁸ and it also contained an exemption for group health plans whose compliance would increase total costs by more than two percent during the first year or by more than one percent each subsequent year.¹⁰⁹

Many State legislatures have enacted their own mental health parity laws, which vary widely in scope.¹¹⁰ Some of these laws require insurers to offer mental health benefits and to provide full parity between physical and mental health benefits, some laws require insurers to offer optional mental health coverage, some laws require insurers to offer mental health benefits equal to medical health benefits but only if mental health benefits are offered, some laws require a minimum level of coverage for mental health benefits, and some laws contain yet other variations.¹¹¹

One question is whether advances in neuroscience will impact mental health parity interpretations or applications at the federal or State level. I think they may in at least two different ways. The first way relates to the way in which litigants or courts interpret

¹⁰⁶ Paul Wellstone Addiction and Mental Equity Act of 2007, H.R. 1424, 110th Cong., 1st Sess., Mar. 9, 2007; Mental Health Parity Act, S. 558, 110th Cong., 1st Sess., Sept. 19, 2007 (“A bill to provide parity between health insurance coverage of mental health benefits for medical and surgical services”).

¹⁰⁷ See, e.g., The Senate Approves the “2007 Mental Health Parity Act”: Achieving Equal Treatment for the Mentally Ill, available at http://writ.news.findlaw.com/scripts/printer_friendly.pl?page=/colb/20071001.html (last visited Feb. 3, 2008) (“[T]he new law would signal progress in the acceptance of mental illness as a ‘real’ medical condition, one that deserves the same accommodation and concern as heart disease or cancer. Such acceptance could diminish the stigma attached to people who suffer from these conditions and could, accordingly, motivate people who might otherwise feel ashamed to seek care when they need it.”).

¹⁰⁸ Mental Health Parity Act, S. 558, 110th Cong., § 712a(a), Sept. 19, 2007 (only requiring parity for a group health plan that “provides both medical and surgical benefits and mental health benefits”).

¹⁰⁹ *Id.* § 712a(e)(1) and (2).

¹¹⁰ See, e.g., Jacobi, *supra* note 35, at 190 (summarizing state mental health parity laws); Michele Garvin et al., *Mental Health Parity: The Massachusetts Experience in Context*, 47 B. B.J. 18 (May/June 2003), at *19 (same); NATIONAL CONFERENCE OF STATE LEGISLATURES, STATE LAWS MANDATING OR REGULATING MENTAL HEALTH BENEFITS (Nov. 1, 2007), available at <http://www.ncsl.org/programs/health/mentalben.htm> (last visited Feb. 4, 2008) (same).

¹¹¹ Garvin et al., *supra* note 110, at *19.

¹⁰⁰ See, e.g., Gold, *supra* note 94, at 777.

¹⁰¹ See, e.g., Nelson, *supra* note 17, at 93. See also Mental Health America, Mental Health Parity Timelines, available at <http://www1.nmha.org/state/parity/parityTimeline.cfm> (last visited Jan. 3, 2008).

¹⁰² Mental Health Parity Act of 1996, Pub. L. No. 104–204, 702(a), 110 Stat. 2944 (Sept. 26, 1996), *codified at* 29 U.S.C. § 1185a(a)(1) and (2) (1996).

¹⁰³ 29 U.S.C. § 1185a(b)(1) (1996).

¹⁰⁴ *Id.* § 1185a(b)(2).

¹⁰⁵ See, e.g., The Senate Approves the “2007 Mental Health Parity Act”: Achieving Equal Treatment for the Mentally Ill, available at http://writ.news.findlaw.com/scripts/printer_friendly.pl?page=/colb/20071001.html (last visited Feb. 3, 2008).

the mental health benefits that are subject to the applicable parity mandate. Many State laws contain specific descriptions of the mental health benefits that are subject to the State's parity mandate.¹¹² Connecticut, for example, mandates insurance coverage for most conditions listed in the DSM-IV.¹¹³ Montana mandates parity for seven disorders: schizophrenia, schizoaffective disorder, bipolar disorder, major depression, panic disorder, obsessive-compulsive disorder, and autism.¹¹⁴ New Jersey mandates insurance coverage for "a mental or nervous condition that is caused by a biological disorder of the brain and results in a clinically significant or psychological syndrome or pattern that substantially limits the functioning of the person with the illness, including, but not limited to, schizophrenia, schizoaffective disorder, major depressive disorder, bipolar disorder, paranoia and other psychotic disorders, obsessive-compulsive disorder, panic disorder and pervasive developmental disorder or autism."¹¹⁵ Nebraska expressly ties its current definition of serious mental illness to the state of medical science: "any mental health condition that current medical science affirms is caused by a biological disorder of the brain and that substantially limits the life activities of the person with the serious mental illness..."¹¹⁶ Many scholars also urge the adoption of mental disorder definitions that are tied to the current state of medical science: "Congress should pass legislation requiring full parity between certain biologically based mental illnesses and physical illnesses. Such a bill should include a very small list of disorders with the clearest scientific backing for their biological bases.... [I]t would be

relatively simple matter to amend the law in the future to add any other diagnoses that achieve wide scientific recognition as a biologically based brain disorder."¹¹⁷

Given litigants' liberal use of expert psychiatric, psychological, and neuroimaging evidence to support brain-based claims starting in the late 1980s, I suspect that in States such as New Jersey that mandate insurance coverage for "a mental or nervous condition that is caused by a biological disorder of the brain" or in States such as Nebraska that expressly define protected mental health benefits in terms of whether "current medical science affirms [that the disorder] is caused by a biological disorder of the brain,"¹¹⁸ aggressive plaintiffs may use structural and functional neuroimaging studies in an attempt to establish a biological basis for their conditions, the treatment of which would then be subject to the State's parity mandate. Note that any neuroscience-based evidence would not necessarily be sufficient for the plaintiff; in some states, she still would be required to prove that her mental disorder substantially limits her functioning, which may require additional medical or social evidence regarding her inability to work or complete other activities of daily living.¹¹⁹ Again, insurers would have an evidentiary defense¹²⁰ as well as a range of substantive and normative defenses; that is, that cost containment,¹²¹ lack of medical necessity,¹²² or other reasons justify insurers' refusal to cover the

¹¹² See, e.g., Brunalli, *supra* note 34, at 601 (describing different states' definitions of mental illness); Michael J. Carroll, *The Mental Health Parity Act of 1996: Let It Sunset if Real Changes Are Not Made*, 52 *DRAKE L. EV.* 553, 570–71 (2004) (same).

¹¹³ CONN. GEN. STAT. § 38a-514(a) (2008) (excluding caffeine use disorders and other less serious mental disorders).

¹¹⁴ MONT. CODE ANN. § 33–22–706(6)(a)-(g) (2007).

¹¹⁵ N.J. STAT. ANN. § 17B:27A-19 (2007).

¹¹⁶ NEB. EV. STAT. § 44–792(5)(a) (2008).

¹¹⁷ Nelson, *supra* note 17, at 108.

¹¹⁸ NEB. EV. STAT. § 44–792(5)(a) (2008).

¹¹⁹ See, e.g., N.J. STAT. ANN. § 17B:27A-19 (2007) (mandating insurance coverage for "a mental or nervous condition... that substantially limits the functioning of the person with the illness...").

¹²⁰ See, e.g., Mark Pettit, *FMRI and BF Meet FRE: Brain Imaging and the Federal Rules of Evidence*, 33 *AM. J. L. & MED.* 319 (2007); Leo Kittay, *Admissibility of fMRI Lie Detection: The Cultural Bias against "Mind Reading" Devices*, 72 *BROOKLYN L. EV.* 1351 (2007); Erin A. Egan, *Neuroimaging as Evidence*, 7(9) *AM. J. BIOETHICS-NEUROSCIENCE* 62 (2007); Jocelyn Downie & Ronald Murphy, *Inadmissible, Eh?* 7(9) *AM. J. BIOETHICS-NEUROSCIENCE* 67 (2007); Charles N. W. Keckler, *Cross-Examining the Brain: A Legal Analysis of Neural Imaging for Credibility Impeachment*, 57 *HASTINGS L.J.* 509 (2006); Archie Alexander, *Functional Magnetic Resonance Imaging Lie Detection: Is a "Brainstorm" Heading for the Gatekeeper?* 7 *HOUSTON J. HEALTH L. & POL'Y* 1 (2006).

¹²¹ See, e.g., the Mental Health Parity Act of 1996, *codified at* 29 U.S.C. § 1185a(C)(2) (allowing insurers to opt out of parity if parity raises overall plan costs more than one percent); Mental Health Parity Act of 2007, S. 558, 110th Cong., § 712a (e)(1) and (2), Sept. 19, 2007 (exempting from parity group health plans "whose compliance would increase total costs by more than 2% during the first year or by more than 1% each subsequent year").

¹²² See, e.g., Sabin & Daniels, *supra* note 10, at 5 (discussing medical necessity in the context of mental health care).

extra mental disorders regardless of the merit of plaintiffs' neuroscience-based claims.

A second way in which advances in neuroimaging may impact mental health parity law is to provide support for the passage of parity legislation in states that do not have such legislation or support for more stringent parity legislation at the federal or State level. When the Texas Legislature was considering a mental health parity bill in 1991, Senator Mike Moncrief (D-Fort Worth), the bill's sponsor, wanted the Texas Legislature to understand why he was concerned about insurers' willingness to cover treatments for neurological disorders such as Parkinson's disease but not mental disorders such as schizophrenia.¹²³ Senator Moncrief told the Legislature that the disparate treatment was illogical because both conditions involve an imbalance of the same chemical: "[The] chemical factor in the brain involved in both of these diseases is the same; it's dopamine. One disease involves an overabundance of dopamine while the other is a shortage of the identical neurotransmitter."¹²⁴ I anticipate that proponents of mental health parity legislation will continue to use neuroscience to illustrate what they perceive to be illogical or unjust coverage discrepancies.¹²⁵ In a 2004 essay published in the *Harvard Journal on Legislation*, Representative Patrick Kennedy (D-R.I.) argued that, "In the face of a growing body of scientific literature documenting the biochemical nature of mental illnesses, the status quo of insurance discrimination against those who suffer from such illnesses is indefensible."¹²⁶ Kennedy cited three NIMH research summaries noting that NIMH investigators had discovered "specific, subtle abnormalities in the structure and function of the brains of patients with schizophrenia,"

¹²³ Shannon, *supra* note 20, at 397, n.145 (citing Tex. Floor Debate, 71st Leg. Reg. Sess. (Apr. 25, 1991) (transcript available from Senate Journal Office; Statement of Sen. Moncrief)).

¹²⁴ *Id.*

¹²⁵ Beth Mellen Harrison, *Mental Health Parity*, 39 HARV. J. LEGIS. 255, 265 (2002) ("Given these advances in research, there is no scientific justification for treating mental health services differently than general medical services.").

¹²⁶ Representative Patrick J. Kennedy, *Why We Must End Insurance Discrimination Against Mental Health Care*, 41 HARV. J. LEGIS. 363, 367 (2004).

¹²⁷ *Id.* at 367, n.39.

¹²⁸ *Id.* at 374–75.

¹²⁹ Paul Wellstone Addiction and Mental Equity Act of 2007, H.R. 1424, 110th Cong., 1st Sess., Mar. 9, 2007.

that "one of the most consistent findings to date has been the appearance of specific abnormalities, or lesions, in the white matter of the brain in patients with bipolar disorder," and that "animal research suggests that "different anxiety disorders may be associated with activation in different parts of the amygdala."¹²⁷ Kennedy concluded: "In an era where researchers are churning out even more science exploring the biochemical and physiological causes and effects of mental illnesses, there is no excuse for such differential treatment."¹²⁸ Kennedy is the lead sponsor of the House version of the mental health parity bill currently before Congress.¹²⁹

The Distribution of Social Security and Other Benefits

Stakeholders also are using advances in neuroscience, especially neuroimaging, to impact disputes about the receipt of benefits under public and private disability, social security, and other benefit programs. To prevent healthy plaintiffs from receiving benefits when they do not have a disability, disability plans and programs tend to define disability in terms of an abnormality that is "demonstrable by medically acceptable clinical and laboratory diagnostic techniques."¹³⁰ Medical evidence is the cornerstone of disability status.¹³¹ Social Security Disability Insurance (SSDI), for example, is only available to claimants who can furnish medical and other evidence of the existence of a disability, including "medical signs and findings, established by medically acceptable clinical or labora-

¹³⁰ See, e.g., 42 U.S.C. § 423(d)(1)(A), 423(d)(3) (2007) (defining disability for purposes of Social Security Disability Insurance as an "inability to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than 12 months... For purposes of this subsection, a 'physical or mental impairment' is an impairment that results from anatomical, physiological, or psychological abnormalities which are demonstrable by medically acceptable clinical and laboratory diagnostic techniques.").

¹³¹ See, e.g., Social Security Administration, *Disability Evaluation under Social Security*, BLUE BOOK, at Part II, Evidentiary Requirements (June 2006; amended April 2007), available at <http://www.ssa.gov/disability/professionals/bluebook/evidentiary.htm> (last visited Feb. 7, 2008) ("Under both the Title II and Title XVI programs, medical evidence is the cornerstone for the determination of disability.").

tory diagnostic techniques.”¹³² Because the Social Security Administration (SSA) will not consider claimants’ subjective pain or other claims as conclusive evidence of disability¹³³ but will consider more objective evidence¹³⁴ such as “abnormal magnetic resonance imaging brain scan[s],”¹³⁵ I anticipate that more plaintiffs will attempt to offer neuroimaging evidence of their disabilities, especially in light of the frequency with which claimants already have introduced brain scans in an attempt to prove their disabilities and with which courts already have denied disability claims based on the lack of neuroimaging or other “objective” evidence of a disability.

In 2003, for example, the Sixth Circuit Court of Appeals reviewed a district court’s decision to affirm the Social Security Commissioner’s denial of the plaintiff’s claim for SSDI benefits based a number of physical complaints, including fibromyalgia, pain, and chronic fatigue syndrome.¹³⁶ The Sixth Circuit quoted the SSA’s statutory standard for assessing pain and fatigue, which requires “objective clinical or laboratory manifestations” versus subjective first-person complaints.¹³⁷ Given that no traditional laboratory tests confirm diagnoses such as chronic fatigue syndrome, the SSA stated below that it would allow findings from an “abnormal magnetic resonance imaging MRI brain scan.”¹³⁸ The Sixth Circuit ultimately affirmed the district court’s conclusion that the claimant did not provide sufficient evidence of her disability status because she did not submit sufficient objective evidence of her pain.¹³⁹

Neuroscience also is being used to impact disputes about the receipt of benefits under private disability plans. In 2005, for example, the Ninth Circuit Court

¹³² 42 U.S.C. § 423(d)(5)(A) (2007).

¹³³ Id. § 423(d)(5)(A) (2007) (“An individual’s statement as to pain or other symptoms shall not alone be conclusive evidence of disability as defined in this section....”).

¹³⁴ Id. § (“[T]here must be medical signs and findings, established by medically acceptable clinical or laboratory diagnostic techniques, which show the existence of a medical impairment that results from anatomical, physiological, or psychological abnormalities which could reasonably be expected to produce the pain or other symptoms alleged and which, when considered with all evidence required to be furnished under this paragraph (including statements of the individual or his physician as to the intensity and persistence of such pain or other symptoms which may reasonably be accepted as consistent with the medical signs and findings), would lead to a conclusion that the individual is under a disability.”).

of Appeals reviewed a district court’s grant of summary judgment in favor of the NFL Players Retirement Plan and the NFL Players Supplemental Disability Plan (Plans) in a lawsuit filed by former professional football player Brent Boyd for disability benefits.¹⁴⁰ Boyd claimed that he suffered organic brain problems after he was knocked unconscious in a preseason football game in August 1980 and that his “constant flu-like feeling, fatigue, headaches, queasiness, forgetfulness, intermittent blurred vision, difficulty reading, lack of concentration, learning difficulty, memory loss, and dizziness and lightheadedness” qualified him for total and permanent disability benefits under the Plans.¹⁴¹ As part of the lawsuit, Boyd was subjected to nearly two days of neuropsychological testing. Some of the physicians agreed with Boyd that his single photon emission computed tomography (SPECT) scan showed “decreased brain activity ‘consistent with head trauma’”¹⁴² and that he was disabled due to his August 1980 brain injury.¹⁴³ Other physicians agreed with the Plans that Boyd’s depression, untreated hypertension and physical deconditioning, and not the alleged August 1980 head injury, caused his symptoms.¹⁴⁴ In the end, the Ninth Circuit upheld the district court’s grant of summary judgment in favor of the Plans.¹⁴⁵

¹³⁵ *Bartyzel v. Commissioner*, 74 Fed. Appx. 515, 527 (6th Cir. 2003) (“[T]he following findings will be sufficient, although not required, to establish a medically determinable impairment under the Act... An abnormal magnetic resonance imaging (MRI) brain scan....”).

¹³⁶ Id. at 515.

¹³⁷ Id. at 524 (citing 42 U.S.C. § 423(d)(5)(A) (2008) (“there must be medical signs and findings, established by medically acceptable or clinical or laboratory diagnostic techniques, which show the existence of a medical impairment that results from anatomical, physiological, or psychological abnormalities which could reasonably be expected to produce the pain.”)); *id.* at 527 (“[E]vidence of an impairment must include objective clinical or laboratory manifestations.”).

¹³⁸ Id. at 527.

¹³⁹ Id. at 528–529.

¹⁴⁰ *Boyd v. Bert Bell/Pete Rozelle NFL Players Retirement Plan*, 410 F.3d 1173 (9th Cir. 2005).

¹⁴¹ Id. at 1175.

¹⁴² Id. at 1177.

¹⁴³ Id.

¹⁴⁴ Id.

¹⁴⁵ Id. at 1179.

Based on the *Boyd* case and a number of other disability cases in which structural and functional brain scans have been ordered, used, or requested,¹⁴⁶ I anticipate that plaintiffs will continue to attempt to introduce both structural and functional neuroimaging evidence in support of their disability claims.¹⁴⁷ How might we assess these claims? Many of the limitations mentioned in the previous sections will apply, but note that the SSA and many private disability plans require disability claimants to be unable to engage in any substantial gainful activity for a continuous period of not less than twelve months.¹⁴⁸ Courts have found many claimants with traditional mental disorders not protected because they were able to engage in some type of gainful work activity. The burden of establishing disability is on the claimant, and substantial evidence of disability usually is required.¹⁴⁹ Plaintiffs thus may offer neuroimaging evidence of their impairments, but neuroscience likely will not provide evidence of the existence or significance of any work or other social limitation.¹⁵⁰

¹⁴⁶ See, e.g., *Kearney v. Standard Insurance Co.*, 175 F.3d 1084, 1092 (1999) (in which a physician recommended a brain scan to clarify the disability insurance claimant's diagnosis of possible metabolic disturbance, early Alzheimer's disease, episode of ischemia, or embolus to the brain).

¹⁴⁷ The health, disability, and welfare case law is filled with claims by plaintiffs for benefits based on a range of novel conditions and behaviors, such as phobia of driving in unfamiliar locations, known propensity to engage in risky behavior, ability to become angered easily, sensitivity to fragrances, cat and dog allergies, other allergies and chemical sensitivities, fear of cancer, grief, conversion disorder, albinism, eosinophilia, generalized stress, and so on. See, e.g., *Sinkler v. Midwest Property Management*, 209 F.3d 678 (7th Cir. 2000) (phobia of driving anywhere unfamiliar did not substantially limit plaintiff's ability to work and therefore is not a disability); *Christian v. St. Anthony Medical Center*, 117 F.3d 1051 (7th Cir. 1997) (plaintiff claimed disability of high cholesterol level); *Fenton v. Pritchard Corp.* 926 F. Supp. 1437 (D. Kan. 1996) (plaintiff's propensity to "go postal" or "go ballistic" not a disability); *Kaufmann v. GMAC Mortgage*, 2007 WL 1933913 (3rd Cir. 2007) (plaintiff claimed disability of fragrance sensitivity); *Gallagher v. Sunrise Assisted Living of Haverford*, 268 F. Supp.2d 436 (E.D. Pa. 2003) (allergy to cats and dogs not a disability); *Shah v. Upjohn Co.*, 922 F. Supp. 15 (W.D. Mich. 1995) (allergy to job and fear of cancer do not constitute disabilities); *Bukta v. J.C. Penney Co., Inc.*, 359 F. Supp.2d 649 (2004) (plaintiff claimed conversation disorder was disability); *Baker v. Greyhound Bus Line*, 240 F. Supp.2d 454 (D. Md. 2003) (albinism not disability); 42 U.S.C.A. § 12102, Notes of Decisions, 44–149 (2005) (annotated list of hundreds of cases in which plaintiffs claim tradition and novel disabilities).

Conclusion

American patients, patient advocacy organizations, litigants, lobbyists, legislators, and scholars are relying on advances in the behavioral and brain sciences to characterize structural and functional differences as brain-based health conditions worthy of insurance coverage, statutory parity, and disability benefits. Some of these claims concern me. Consider the insurer who argued that the plaintiff did not have a mental disorder because the plaintiff had not presented any neuroimaging evidence of the disorder but then conceded that neuroimaging cannot yet diagnose mental disorders.¹⁵¹ This type of argumentation shows the extent to which litigants may be willing to throw into the ring any neuroscience-based claim in the hope that something will stick with the judge or the jury. Although concessions and alternative argumentation are part and parcel of zealous advocacy, they do not help judges, jurors, or litigants obtain a more sophisticated understanding of neuroscience in general or the capability of neuroimaging technologies in particular. One of the reasons I am excited about the emerging neurolaw and neuroethics literature is that judges may read the careful scientific, philosophical, and evidentiary analyses and issue better opinions as a result.

¹⁴⁸ 42 U.S.C. § 423(d)(1)(A), (d)(2) (2007) ("An individual shall be determined to be under a disability only if his physical or mental impairment or impairments are of such severity that he is not only unable to do his previous work but cannot, considering his age, education, and work experience, engage in any other kind of substantial gainful work which exists in the national economy, regardless of whether such work exists in the immediate area in which he lives, or whether a specific job vacancy exists for him, or whether he would be hired if he applied for work. For purposes of the preceding sentence (with respect to any individual), 'work which exists in the national economy' means work which exists in significant numbers either in the region where such individual lives or in several regions of the country.")

¹⁴⁹ *Carter v. Schweiker*, 649 F.2d 937, 940 (2nd Cir. 1981)

¹⁵⁰ *Id.* at 940–41 ("The record contains substantial evidence to support the ALJ's determination that Carter's seizures were not disabling. None of the physicians who treated or examined Carter indicated that her seizures so severely restricted her ability to engage in 'substantial gainful activity' as to be disabling.")

¹⁵¹ *Fitts*, 2007 U.S. Dist. LEXIS 33397, *25.

What gives me real cause for pause, though, is the appropriateness of many of the stakeholders' subsequent normative or substantive arguments; that is, that all structural and functional brain differences should be treated as covered or protected conditions for purposes of health, disability, and benefit law. I do think that neuroscience gives stakeholders one additional source of ammunition, perhaps some will refer to it as evidence, in support of the normative argument that mental disorders should be treated like physical illnesses for purposes of health, disability, and benefit law. I also think that advances in neuroscience do give us reason to revisit age-old health, disability, and benefit law questions, such as, "What kinds of mental suffering create legitimate claims from others through public or private health insurance?"¹⁵² But neuroscience does not yet and probably never will answer a range of questions that are more important to the future of American health law and policy. For example, neuroscience does not yet tell us when a particular structural or functional brain differences should be considered a neurological characteristics or adaptation, on the one hand, or evidence of a DSM-IV mental disorder that requires treatment on the other. Neuroscience also does not tell us how we should allocate finite health care dollars among all of the different physical and mental disorders, including the expanding category of biologically based mental disorders. Even with advances in neuroscience, we are still left to weigh the value of knowing that many mental disorders may have a biological component against the cost of providing equal insurance benefits, the cost of expanding the scope of protected status under disability law, and the cost of distributing additional benefits under other legal schemes.

Neuroscience also does not give us a better definition of "medical necessity," which is the key to reimbursement under most public and private health insurance plans in the U.S. Neuroscience does not tell us when a structural or functional difference becomes significant enough such that its treatment

should be reimbursed by the Medicare or Medicaid Programs or a private health insurance plan. Neuroscience also does not tell us whether we should take a "hard-line" or "expansive" view of medical necessity.¹⁵³ Should our health insurers only reimburse treatments for impairments that significantly interfere with an individual's ability to live and function? Or, should our health insurers reimburse treatments that would enhance healthy individuals' current level of functioning? Stated more broadly, should the U.S. adopt a "normal function model" of health care (in which the target of clinical action is a medically defined deviation and the goal of health care is to decrease the impact of disease or disability), a "capability model" (in which the target of clinical action is an unchosen constraint of personal capability and the goal of health care is to enhance personal capability) or a "welfare model" (in which the target of clinical action is an unchosen constraint of potential for happiness and the goal of health care is to enhance potential for happiness)?¹⁵⁴ Neuroscience, as we all know, raises many new questions about the differences between treatment and enhancement.¹⁵⁵

Even with neuroscience, American health policymakers will continue to struggle with how best to identify health care's goals, define medically necessary care, and determine how much medically necessary care public and private programs should provide.¹⁵⁶ In the meantime, I recommend that lawyers and scholars who work in the areas of health, disability, and benefit law (and not just those who self-identify as neurolawyers or neuroethicists) be mindful of the ways in which stakeholders will use neuroscience to bear on the formulation and interpretation of such law.¹⁵⁷

¹⁵² See, e.g., Robert Klitzman, *Clinicians, Patients, and the Brain*, in *NEUROETHICS: DEFINING THE ISSUES IN THEORY, PRACTICE, AND POLICY* 229, 236 (Judy Illes ed., 2006) ("What if clinicians can improve upon a person's baseline level of cognitive functioning? Should clinicians be limited in doing so in any way?"); Erik Parens, *How Far Will the Term Enhancement Get Us as We Grapple with New Ways to Shape Our Selves?* in *NEUROETHICS: MAPPING THE FIELD* 152 (Steven J. Marcus ed., 2002) (same).

¹⁵³ See Sabin & Daniels, *supra* note 10, at 12.

¹⁵⁴ See David B. Wexler, *Putting Mental Health into Mental Health Law: Therapeutic Jurisprudence*, in *ESSAYS IN THERAPEUTIC JURISPRUDENCE* 7, 10 (David B. Wexler & Bruce J. Winick eds., 1991) (encouraging stakeholders to consider ways in which the clinical literature might bear on the formulation of legal arrangements).

¹⁵² Sabin & Daniels, *supra* note 10, at 5.

¹⁵³ Id. See also William M. Glazer, *Psychiatry and Medical Necessity*, 22(7) *PSYCHIATRIC ANNALS* 362 (July 1992).

¹⁵⁴ See Sabin & Daniels, *supra* note 10, at 10-11 (offering three approaches to health care).