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INTRODUCTION: ADOLESCENT MEDICAL DECISION MAKING AND THE LAW OF THE HORSE

AMANDA C. PUSTILNIK*

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Legal and ethical regimes relating to adolescent medical decision making resemble what Judge Frank H. Easterbrook derisively called “the Law of the Horse”: Many laws deal with horses, he wrote, but there is no such field as “horse law.”¹ Similarly, even though the United States has juvenile and family courts, as well as pediatric and adolescent medical departments, there is not a distinct field of “adolescent medical decision-making law” or ethics; there are just many disparate policies that implicate or impinge upon decisions made by adolescents. These include state laws ranging from those that permit minors to seek treatment for substance misuse or mental illness without parental consent to those that prohibit tattoo parlors from serving minors even with parental consent. They also include ethical norms that inform hospital and clinic policies about whether minors may refuse life-extending medical treatment over their parents’ objections or whether parents may compel their children to have cosmetic procedures without the child’s agreement. At first glance, this range of policies might seem less coherent and productive to mine as a unified body of legal and ethical norms than even “horse law.”

But there is a deeper connection between adolescent decision-making law and ethics and “the Law of the Horse,” one that suggests that adolescent decision making may not be the disparate collection of regimes that it appears to be. In challenging Judge Easterbrook’s characterization of the then-nascent field of

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1. Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, 1996 U. CHI. LEGAL F. 207, 207–08. For the provenance of the expression, which originated with Karl Llewellyn, see Lawrence Lessig, *The Law of the Horse: What Cyberlaw Might Teach*, 113 HARV. L. REV. 501, 501 n.1 (1999).

Internet law as being merely the “Law of the Horse,” Professor Lawrence Lessig asserted that cyberlaw illuminated a general set of issues about the law’s ability to function as a regulator in physical and non-physical space.² The lessons of cyberlaw, he argued, could inform scholarship in many areas concerned with the law’s capacities and limits.³

We make a similar claim about laws and ethical norms relating to adolescent decision making, although it is not nearly as broad. The seemingly disparate policies relating to adolescent decision making illuminate more general issues about how legal and ethical doctrines incorporate scientific information about human cognition and development. Since the existence of separate laws and ethical norms for adolescents and adults is premised on actual differences between them, some kind of consensus about the nature of those differences ought to unify the “law and ethics of adolescent medical decision making.” But it does not. To paraphrase Lessig slightly (and, no doubt, with apologies due), by working through examples of how legal and ethical doctrines interact with issues of adolescent decision making, we can elucidate a set of general questions about doctrinal reliance, or lack thereof, on neuroscientific evidence about human development and behavior.⁴

In the service of this goal, this symposium issue of the Journal of Health Care Law & Policy presents a collection of essays that coalesce around the regulation of adolescent decision making in light of current research on brain development. On April 15, 2011, the Law & Health Care Program at the University of Maryland Francis King Carey School of Law and the Johns Hopkins Berman Institute of Bioethics co-sponsored a conference to address these issues.⁵ The Roundtable Conference on Adolescent Decision-Making brought together leading academics and practitioners to discuss legal and ethical norms relating to adolescent decision making in light of recent developments in neuroscience.

The pieces collected in this issue span a range of approaches to considering adolescents’ capacities and rights to make independent decisions, as balanced against the rights and interests of other stakeholders, such as parents and medical professionals. This Introduction will first present a brief overview of the range of legal and ethical issues relating to adolescent decision making that the Roundtable participants considered. In light of these varied considerations, this Introduction will then consider adolescent *consent* and *assent*; that is, the distinction between

2. Lessig, *supra* note 1, at 502.

3. *Id.*

4. Lessig’s original sentence reads, “By working through these examples of law interacting with cyberspace, we will throw into relief a set of general questions about law’s regulation outside of cyberspace.” *Id.*

5. *Conferences & Symposia: Roundtable on Adolescent Decision-Making*, UNIV. OF MD FRANCIS KING CAREY SCHOOL OF LAW, <http://www.umaryland.edu/faculty/conferences/detail.html?conf=108> (last visited Oct. 17, 2011).

adolescents' ability to be the primary or exclusive decision-maker versus their rights and abilities to accede to decisions suggested by others on their behalf. It concludes by describing each author's contribution to this issue. We hope you will learn as much from the Roundtable participants' papers as we did.

I. HETEROGENEITY AND CONSISTENCY IN ADOLESCENT MEDICAL DECISION- MAKING DOCTRINES

A. *Legal Heterogeneity*

As Professor Jessie Hill explains in her article, the legal standards governing adolescents' autonomy over their bodies are "famously indeterminate" and can lead to apparently bizarre contradictions.⁶ In some jurisdictions, an adolescent can admit herself to a psychiatric hospital, but she cannot receive an aspirin from the school nurse without parental permission. She can procure an abortion without her parents' knowledge or consent, but she cannot get a tattoo even with their permission. Her parents may force her into drug treatment against her will, yet she may refuse life-extending treatment for a terminal illness over her parents' objections. And this same adolescent, who cannot get an aspirin without parental consent, could be sentenced by the state to hard time in an adult prison if she were to commit a crime of violence.

Contradictions and disparities within and across jurisdictions are not unique to laws relating to adolescent decision making, nor are they necessarily problematic. Because the life of the law has been history and not logic (as Justice Holmes nearly said),⁷ disparate *intra*-jurisdictional regimes often result from path dependency and historical contingency. And because states innovate to develop locally appropriate legal regimes, *inter*-jurisdictional differences are part of the fabric of federalism.

Another major driver of heterogeneity among these legal regimes is that the interests of parent, state, child, and the general public appropriately have different weight across different kinds of legal problems. For example, public safety considerations might weigh in favor of allowing a distraught and dangerous teen to independently commit himself to a psychiatric hospital despite the concerns the law otherwise has about the right of his parents to direct his medical care. Conversely, considerations of institutional liability and respect for parental authority, as well as

6. B. Jessie Hill, *Medical Decision Making by and on Behalf of Adolescents: Reconsidering First Principles*, 15 J. HEALTH CARE L. & POL'Y 35, 35 (2012). See also Richard C. Boldt, *Adolescent Decision Making: Legal Issues With Respect to Treatment for Substance Misuse and Mental Illness*, 15 J. HEALTH CARE L. & POL'Y 71, 86-95 (2012) (providing an overview of diverse state laws which either grant or withhold from adolescents the decision-making authority to seek treatment for substance misuse or mental illness).

7. See O.W. HOLMES, JR., *THE COMMON LAW* 1 (1881) ("The life of the law has not been logic; it has been experience.").

the absence of present danger to the public, might justify a state law that requires a school to have parental permission on file before giving the same boy an aspirin. Thus, these apparent contradictions may—at least in some instances—flow quite logically from balancing a variety of stakeholders' interests in these diverse contexts.

Heterogeneity in legal regimes relating to adolescent decision making is to be welcomed if it results from popular and judicial weighing of competing considerations within the particular area of law. Two jurisdictions might weigh public safety versus autonomy differently or set different thresholds for the state's interference with parents' authority. Dissimilar weightings are not necessarily inconsistent; they just reflect diverse normative preferences or developmental pathways in that jurisdiction's laws. Moreover, one branch of law relative to another will routinely and appropriately treat an issue involving the same persons and facts in different ways.

B. Ethical Ambiguities

The heterogeneity in legal standards for adolescent decision making is reflected in, and perhaps reinforced by, genuine ethical disagreement as to when, whether, and how medical professionals ought to include adolescents in decisions about their own care. In the last century, the legal and ethical doctrine of informed consent—which obligates health care providers to provide patients with the information necessary to make knowledgeable, voluntary, and rational decisions about their care⁸—has transformed the doctor-patient relationship from a paternalistic one, in which “doctors know best” about their patients' healthcare,⁹ to a more collaborative one, in which patients and doctors work together to make treatment decisions.¹⁰ While this framework invites adult patients to participate in their health care, it generally entitles adolescents to do the same only in three circumstances: emancipated minors, mature minors, and minors seeking treatment for certain medical conditions, such as sexually transmitted diseases, alcohol or drug misuse, and pregnancy.¹¹ Otherwise, minors are generally thought to lack the requisite decision-making capacity to consent to health care.¹²

In recent years, however, the ethical doctrine of *assent* has gained traction as a mechanism to invite children of various ages, but particularly adolescents, to

8. PAUL APPLEBAUM ET AL., *INFORMED CONSENT: LEGAL THEORY AND CLINICAL PRACTICE* (1987).

9. JAMES F. CHILDRESS, *WHO SHOULD DECIDE? PATERNALISM IN HEALTH CARE* (1982).

10. James F. Childress & Mark Siegler, *Metaphors and Models of Doctor-Patient Relationships: Their Implications for Autonomy*, 5 *THEORETICAL MED.* 17, 18–21 (1984) (describing models of health care decision making).

11. See Comm. on Bioethics, *Informed Consent, Parental Permission, and Assent in Pediatric Practice*, 95 *PEDIATRICS* 314, 316 (1995).

12. *Id.*

voice their treatment preferences. The American Medical Association views adolescents as increasingly capable of independent relationships with their health care providers,¹³ and the American Academy of Pediatrics suggests that “as children develop, they should gradually become . . . the primary partners in medical decision-making, assuming responsibility from their parents.”¹⁴ Both organizations endorse adolescent assent, but there is little agreement among health care providers, bioethicists, and others as to what assent requires, the age at which children can “assent,” the amount and kind of information health care providers ought to disclose to children, and how to assess children’s understanding of that information.¹⁵ Consequently, some commentators contend that “assent is in the midst of an identity crisis.”¹⁶

Nowhere is this crisis more problematic than when adolescents refuse to assent to a particular procedure endorsed by their parents. Should physicians proceed over an adolescent’s dissent when the patient refuses surgical repair of a malformed ear, an orthopedic device to manage scoliosis, or psychotropic medication to manage attention deficit disorder? These treatment refusals, though not without physical and psychological harm, are not fatal. But how should the assent doctrine, in the absence of relevant laws, respond to the adolescent with cancer who refuses further rounds of chemotherapy? Does the patient’s age matter in this context? What about other indicia of maturity and decisional capacity, such as the patient’s previous health care experience? As the assent doctrine develops, these questions about the moral authority of adolescents’ decisions will require continued and thoughtful attention.

C. Adolescent Difference as the Consistent Foundation

Despite the heterogeneity of laws governing adolescent decision making and the absence of a clear paradigm for adolescent assent, policies on adolescent decision making should, indeed must, share fundamental similarities. Although there are many good reasons to support heterogeneity within and across regimes on any particular topic, to argue that special policies ought to exist for adolescents is to grant that adolescents and adults are different. Without acknowledging that adolescents are distinct from adults, separate regimes for adolescents and adults would lack justification. Further, even if the legal relevance and treatment of the bio-social differences between adults and adolescents varies within and across

13. See AMA COUNCIL ON ETHICAL AND JUDICIAL AFFAIRS, CODE OF MEDICAL ETHICS OP. 5.055-CONFIDENTIAL CARE FOR MINORS (last updated 1996) (discussing a physician’s ethical duty “to promote the autonomy of minor patients by involving them in the decision-making process to a degree commensurate with their abilities”).

14. Comm. on Bioethics, *supra* note 11, at 316.

15. Yorma Unguru et al., *Rethinking Pediatric Assent: From Requirement to Ideal*, 55 PEDIATRIC CLINICS N. AM. 211, 212 (2008).

16. *Id.* at 216.

jurisdictions, the law's representation of the differences that justify these distinct regimes must be conceptually stable—or the law risks truly fatal inconsistency.

So what differences justify separate regimes for adolescents and adults? This is the core question, because the ways in which adolescents and adults vary must inform the ways in which our laws and ethical norms treat them differently. And this is the question on which neuroscience can shed at least some light.

Neuroscience can inform legal regimes relating to adolescent decision making, although it cannot fully explain them, by substantiating and verifying, or negating, the ideas of difference on which such policies currently rest. Findings based in neuroscience can inform decision-makers about potential fallacies or anachronisms built into policies' construction of adolescent needs and capacities, which support reform. Or, these findings can help verify the bases on which a particular regime is constructed. On the other hand, neuroscience may not be affirmatively relevant to every area of adolescent decision making, but it at least plays a negative role as to each: Certainly, legal and ethical regimes established specifically to account for differences between adolescents and adults should not embody presumptions or achieve outcomes that are *contrary* to the actual nature of the differences between these groups. This is neither because science trumps policy nor even because any particular scientific fact mandates particular policy treatment; rather, it is because when law or ethical norms are premised on, and justified by, a set of facts-about-the-world, like the differences between adolescents and adults, it must adhere to its own foundations or risk becoming absurd.

To orient readers, the next section will briefly introduce key differences between adolescent and adult brain structures and functions.

II. BIOLOGICAL AND EXPERIENTIAL DIFFERENCES BETWEEN ADOLESCENT AND ADULT BRAINS

Neuroimaging provides powerful evidence of how the typical brain develops during adolescence. Functional imaging studies comparing the brains of adults and adolescents are identifying the biological underpinnings of average behavioral similarities and differences between these groups, giving new substance to conventional distinctions between these life stages. Researchers' key findings relate to the balance in adult and teen brains of executive function, emotion, and responsiveness to social cues.¹⁷ The main findings as to each of these brain functions will be addressed in turn.

17. Among the wealth of literature in this field, see, for example, B.J. Casey & Rebecca M. Jones, *Neurobiology of the Adolescent Brain and Behavior*, 49 J. AM. ACAD. CHILD & ADOLESCENT PSYCHIATRY 1189 (2010); Jay N. Giedd et al., *Brain Development During Childhood and Early Adolescence: A Longitudinal MRI Study*, 2 NATURE NEUROSCIENCE 861 (1999).

A. *Adolescents Have Less Developed “Executive Function” and Process Social Cues Differently than Adults*

Imaging studies show that adolescents have developing, but incomplete, prefrontal cortices, which may indicate immature executive function.¹⁸ The prefrontal cortex (“pfc”) is the large, crenellated surface layer of the brain’s frontal lobes and is also the last region of the brain to develop fully.¹⁹ Although researchers have associated the pfc with hundreds of functions,²⁰ they generally agree that the pfc is the seat of “executive control.”²¹ These are inhibitory functions, like impulse control, long-term planning, and cost-benefit analysis. The pfc may be characterized as the seat of “free won’t”—of our ability to put the brakes on.²² Neuroscientists hypothesize that a less-developed pfc may correlate with a lesser ability to control impulsivity, weigh future consequences, and engage in rational, cost-benefit analysis—hallmarks of typical behavioral differences between teens and adults.²³

Research suggests not only that adolescents reason less effectively than adults but that they reason differently: Teens appear to evaluate risks relationally (“What do my friends think about this?” “What will my friends think of me if I do/don’t do this?”) rather than independently (“Is this a good idea?”).²⁴ One way to view this peer-orientation is that teen cognition is the original crowd-sourcing; this is not

18. For a synopsis of how brain images are made and interpreted, see, for example, Laurence R. Tancredi & Jonathan D. Brodie, *The Brain and Behavior: Limitations in the Legal Use of Functional Magnetic Resonance Imaging*, 33 AM. J.L. & MED. 271, 272–76 (2007) (describing the mechanics of EEG, PET, and fMRI image production and interpretation). For a discussion of the “limitations and distortions” of fMRI, see *id.* at 278–80 (noting that, among other difficulties, brain images can “vary significantly both between subjects and across sessions [with the same subject]”).

19. See Nitin Gogtay et al., *Dynamic Mapping of Human Cortical Development During Childhood Through Early Adulthood*, 101 PROC. NAT’L ACAD. SCI. 8174, 8174 (2004) (showing that pfc is the last brain region of complete maturation); Tomas Paus et al., *Structural Maturation of Neural Pathways in Children and Adolescents: In Vivo Study*, 283 SCIENCE 1908, 1908 (1999); Giedd et al., *supra* note 17, at 861–62.

20. J. Grafman et al., *Fables of the Prefrontal Cortex*, 18 BEHAV. & BRAIN SCI. 349 (1995) (identifying, in a seven-page list, the hundreds of human abilities and characteristics that various researchers have localized to the prefrontal cortex).

21. MICHAEL S. GAZZANIGA, *THE ETHICAL BRAIN: THE SCIENCE OF OUR MORAL DILEMMAS* 95–96 (2006).

22. *Id.* Gazzaniga describes “free won’t” as the ability to suppress inappropriate thoughts, speech, or action. While the pfc may enact “free won’t,” pfc maturation alone cannot account for how the brain determines what is or is not appropriate under the circumstances and, therefore, when to apply the brakes.

23. See ELIZABETH S. SCOTT & LAURENCE STEINBERG, *RETHINKING JUVENILE JUSTICE* 30–57 (2008) (reviewing the state of the research on adolescent brain development). For a thoughtful discussion of Scott and Steinberg’s work, see Emily Buss, Review, *Rethinking the Connection Between Developmental Science and Juvenile Justice*, 76 U. CHI. L. REV. 493 (2009).

24. SCOTT & STEINBERG, *supra* note 23, at 38, 45, 48–50 (describing adolescents’ peer orientation and research on the neurological and psychological bases of teens’ peer orientation).

necessarily the wrong way to make decisions but it might have different costs and advantages than the decision-making styles more typical of adults.²⁵

Professor Abigail Baird's research shows the power of social cognition in adolescents.²⁶ She and her research team asked subjects during interviews and during brain scanning sessions to evaluate dangerous activities, like whether it would be a good idea to set their hair on fire or to free-swim with Great White sharks. Adults had immediate, negative autonomic responses—as well as quick verbal replies. Adolescents, though, tended to read the social barometer before answering one way or another, checking what a peer thought before answering the question. When they evaluated the high-risk scenarios in the scanner, they failed to show the immediate, physiological fear signals that cue adults to avoid bad risks. The teens did, however, show automatic fear activation when they contemplated social rejection. In other words, Baird's research suggests that typical teens respond on a pre-conscious, neurological level to the threat of social rejection the way adults respond to threats of immolation and death.²⁷

These neurological findings may help explain why exhortations to teens not to succumb to peer pressure are of limited, if any, value. Expecting to change a typical teen's behavior by telling him to stand firm in the face of peer ridicule might be akin to telling a typical adult to stay put in the face of a shark attack; not utterly useless, but close. Based on these and other findings, we might expect—and data confirms—that teens are most likely to act impulsively, break the law, and make bad choices in situations where peer salience is high.²⁸ When teens are on their own, however, or are structurally insulated from peer-related considerations, their cognition and decision making is equivalent or even superior to that of adults. This kind of finding could be useful in evaluating and constructing legal regimes related to adolescent decision making.

This relational nature of adolescent decision making is not merely (or not necessarily) a flaw resulting from underdevelopment. Instead, the acute social sensitivity of adolescents itself plays a crucial developmental role. In their article in this issue, clinical psychologist Abigail A. Baird and her co-authors Christy L. Barrow and Molly K. Richard describe adolescence as being analogous to the

25. Gregory S. Berns et al., *Neural Mechanisms of the Influence of Popularity on Adolescent Ratings of Music*, 49 *NEUROIMAGE* 2687, 2687 (2010) (correlating neurological and behavioral markers of anxiety about unpopularity with teen subjects' preferences for pop songs; researchers variation of information about songs' popularity altered teens' perceptions of the songs; neural and behavioral assessments showed teens' anxiety if a song they liked later was rated as unpopular). *See also* Abigail Baird, *In Teen Music Choices, Anxiety Rules: Teens' Brains Reveal Discomfort When Taste Fails to Conform*, *SCL. AM. ONLINE* (Mar. 16, 2010), <http://www.scientificamerican.com/article.cfm?id=in-teen-music-choices-fear-rules>.

26. *See* Abigail Baird et al., *Juvenile NeuroLaw: When It's Good It Is Very Good Indeed, and When It's Bad It's Horrid*, 15 *J. HEALTH CARE L. & POL'Y* 15 (2012).

27. *Id.*

28. *See supra* note 18 and accompanying text.

“critical period” of early childhood in which infants must acquire human grammar.²⁹ In the “sensitive period” of adolescence, they contend, teens learn the social language of adult interaction.³⁰ Just as babies babble and stutter acquiring primary language, adolescents’ sometimes inept and incomplete social “utterances” should be understood as practice with social “language.” On this view, the behavioral “babbling” of adolescence—as awkward, painful, and sometimes harmful as it is—is the essential practice adolescents require to develop into agents who can participate fluently in their particular social world.

B. Teens Must Connect Emotion and Reason Through Experience

Executive function and emotional responses are not just less developed or different in teens: These two capacities are also less closely linked than in the typical adult brain.³¹ As a result, a teen may intellectually understand an issue and emotionally have a response to that issue, but those two processes may occur nearly in parallel rather than in dialogue.³² This implicates decision making, because decisions are not simply, or even primarily, rational: Emotional and executive functions must work together to bring about almost any kind of decision.³³

For the pfc to receive and then inhibit impulses arising from the brain’s limbic regions, these brain regions must be connected to each other via nerve fibers. In adults with normal impulse control, long, thick “tracts” of nerve fibers connect the prefrontal cortex with key limbic areas.³⁴ Research correlates the density and extent (literally the length) of the fibers tracts with impulse; several experiments have succeeded in using the strength of these connections in predicting self-control in

29. Baird et al., *supra* note 26.

30. *Id.*

31. B.J. Casey et al., *Braking and Accelerating of the Adolescent Brain*, 21 J. RES. ON ADOLESCENCE 21, 25 (2011).

32. *Id.*

33. See Antoine Bechara et al., *Different Contributions of the Human Amygdala and Ventromedial Prefrontal Cortex to Decision-Making*, 19 J. NEUROSCIENCE 5473 (1999) (a classic paper setting out early proof of the “somatic marker hypothesis,” which “proposes that decision-making is a process that depends on emotion”). The somatic marker hypothesis has since become widely adopted. See, e.g., Jonathan Haidt, *The Emotional Dog and Its Rational Tail: A Social Intuitionist Approach to Moral Judgment*, 108 PSYCHOL. REV. 814, 814 (2001) (arguing that judgments, particularly moral judgments, are “generally the result of quick, automatic evaluations,” while rational faculties create *post hoc* justifications for fundamentally emotionally-driven responses). Despite the reputation emotion has had over the years as a sort of flaw that undermines reason, studies of brain-damaged patients show that decision making based on reason alone results in severely impaired decision making. Patients with damage to the ventromedial prefrontal cortex (vmPFC) suffer from pervasive lack of emotion – a kind of “acquired psychopathy,” which leaves them rationally intact but emotionally flat; these and other brain-damaged patients have extreme difficulty making putatively “rational” decisions in the absence of any inner emotional cues. Hannah Damasio, *Disorders of Social Conduct Following Damage to Prefrontal Cortices*, in NEUROBIOLOGY OF HUMAN VALUES 37, 37–46 (Jean-Pierre Changeux et al. eds., 2005) (surveying acquired impairments in conduct, judgment and decision making).

34. Casey et al., *supra* note 31, at 25 (reviewing recent imaging and impulse control research on white matter tracts connecting the pfc and subcortical regions).

laboratory tasks.³⁵ Adults have these neural connections because they developed them during adolescence; adolescents, who may have highly developed verbal and intellectual capacities, are still in the process of developing these inhibitory and evaluative connections between intellect and drive or emotion.³⁶ If people were cars, it would be as if we came out of the factory with all the acceleration—all the drive, or drives—we will ever have but with our brake cables only weakly connected. For the brake cables to connect more strongly over time, the precarious car must take to the road and practice braking.³⁷

The brain develops its executive control, inhibitory strength, and synthesis of emotion and reason through the marriage of time and practice. This is because mature decision making arises from ontogeny and experience. Adolescents thus need not only time but also the right kinds of experiences, which might include patterning and modeling on good mentors, taking risks and making mistakes, engaging in meaningful reflection on one's own experiences and those of others, and participating in formal and informal education that cultivates moral and humane virtues.

The articles in this Issue explore ways in which various legal and ethical rules can, and in some cases already do, balance the interests of protecting adolescents—and others—from their potentially poor decisions while allowing them enough autonomy to gain the life experiences they need to become competent adults. Having provided overviews of the legal and ethical regimes relating to adolescent decision making, and the key features that distinguish the brain structures and functions of adolescents from those of adults, this Introduction briefly describes the articles that follow in this Issue.

III. CONTRIBUTORS

The first set of articles traces the evolution of legal trends in adolescent decision making and incorporates discussions of neuroscience, medical treatment, and substance misuse and mental illness. Setting the stage for this Issue's consideration of adolescent decision making in light of current neuroscience, clinical psychologist Abigail A. Baird and research assistants Christy L. Barrow and Molly K. Richard describe their original research on adolescent brain development and decision making in their article *Juvenile NeuroLaw: When It's Good It Is Very Good Indeed, and When It's Bad It's Horrid*.³⁸ The authors

35. *Id.* (noting that “frontostriatal connection strength positively predicted impulse control capacity, as measured by performance on a go/nogo task”).

36. *Id.*

37. See B.J. Casey et al, *Imaging the Developing Brain: What Have We Learned About Cognitive Development?*, 9 TRENDS COGNITIVE SCI. 104, 108 (2005) (arguing that research on the differences between adolescent and adult brains must attend more carefully to the joint role in brain development of biological maturation and experiential learning).

38. Baird et al., *supra* note 26.

consider how this research relates to legal regimes ranging from the recent abolition of the juvenile death penalty to forthcoming challenges to juveniles' access to abortion. Baird and her colleagues present us with a dynamic systems view of adolescent decision making: They show how the brain's particular stage of development, the adolescent's immediate context, and the adolescent's experience and conditioning in the broader social environment function as an integrated system; no one factor controls, or even operates in the absence of the others. This, they suggest, can help the law pinpoint the ways in which elements of this system can be manipulated to improve outcomes. For example, they contrast teens' usually impulsive, peer-influenced decisions to engage in criminal conduct with the reflective, more peer-insulated reasoning a teen would engage in when deciding to end life-extending treatment or terminate a pregnancy. By explaining the context of the decision, which the law often fails to adequately address, Baird and her colleagues resolve the seeming conflict between the criminal law, which tends to treat juveniles as juveniles, and abortion jurisprudence, which in some states permits adolescent girls to exercise the same autonomy to choose abortion as their adult counterparts.

Professor Jessie Hill, in her article *Medical Decision Making by and on Behalf of Adolescents: Reconsidering First Principles*, delves into the welter of conflicting laws and norms about adolescent medical decision making.³⁹ She argues that confusion in this arena results in part from scholars' and lawmakers' erroneous beliefs about the foundations of these laws. Hill traces how lawmakers believe that two putatively common law presumptions, one about childhood incapacity and the other about parental rights, provide the foundation for the law of adolescent medical decision making. She first challenges the descriptive accuracy of these presumptions, finding a much richer and more varied historical record relating to adolescents' legal control of their bodies. She then challenges the practical and normative value of these presumptions. Finding that these presumed default rules have neither the weight of common law tradition nor redeeming practical and normative value, Hill proposes that laws relating to adolescent medical decision making instead be grounded in constitutional doctrine on bodily integrity. Developing constitutionally-grounded doctrine on minors' rights to bodily integrity, and the conditions under which those rights may be curtailed or abrogated by the state, would, she concludes, benefit medical providers, minors, and the state of the law itself.

Adolescent Decision Making: Legal Issues With Respect to Treatment for Substance Misuse and Mental Illness, by Professor Richard C. Boldt, describes the need for balancing the interests of adolescents with those of their parents or guardians when faced with decisions regarding medical treatment, focusing specifically on treatment for substance misuse and other mental illnesses in the

39. Hill, *supra* note 6.

context of informed consent and medical privacy concerns.⁴⁰ Boldt begins by noting that three interests are at stake when addressing adolescents' ability to make decisions about their medical treatment: basic interests in physical and emotional well-being; developmental interests in maximizing capacities; and autonomy interests in having the liberty to make decisions. In demonstrating how these interests can conflict with parents' interests and attempts to act in good faith, Boldt argues that adolescents' involvement in medical decision making should be handled along a continuum to balance the competing interests. He then provides an overview of the different ways that states have sought to achieve this balance through legislative enactments and judicial decisions, concluding that while parents' decisions tend to be the "final say," many states have introduced exceptions for consent to substance misuse treatment. Boldt initiates a discussion on the disclosure of confidential medical treatment information to adolescents' parents. He notes that in this arena, federal and state laws come into conflict because federal privacy laws require written consent before disclosure of confidential medical information. According to Boldt, this is another example of the conflict between adolescents' autonomy interests and parents' interests in their children's care. Boldt concludes that adolescents should be as closely involved as reasonably possible in every major step of their treatment and its possible consequences, as well as the consequences of rejecting treatment, even if they are not the final decision makers.

The second set of articles transitions to a focus on the ethical issues involved in adolescent medical decision making. Like Professor Boldt, Dr. Yoram Unguru, a pediatric oncologist, stresses the importance of including youth and adolescents in key decisions about their medical treatment in age-appropriate ways.⁴¹ In *Decision Making for Children with Life-limiting Illnesses: A Clinical Approach*, he argues that it is both important and beneficial to have candid discussions with children regarding prognosis and death. Unguru's article approaches adolescent medical decision making from a clinical and ethical perspective and focuses on the need for direct communication among children, parents, and physicians in general, but more particularly when faced with life-limiting illnesses. Unguru begins with a discussion of children's decision-making capacities, noting that it is not only appropriate, but also ethically justifiable for pediatricians to obtain the assent of children who are unable to make autonomous choices. According to Unguru, in determining the validity of a minor's assent, medical professionals must account for the child's developmental stage and her basic treatment preferences, even if those preferences are sometimes overridden by parental choices. In defining the limits of assent, Unguru acknowledges that parental decisions hold greater weight

40. Boldt, *supra* note 6.

41. Yoram Unguru, *Decision Making for Children with Life-limiting Illnesses: A Clinical Approach*, 15 J. HEALTH CARE L. & POL'Y 113 (2012).

in most contexts; yet, he argues that parents and medical professionals need to actively engage children and allow them to contribute to their treatment plans. He stresses that evaluating children's decision-making capacity is an individually-focused endeavor that should consider the child's maturity and past experience with decision making. In emphasizing the need for direct communication with children, Unguru points out that pediatricians often "bridge the gap" between children and parents, opening up lines of communication for the involved parties to express their preferences. He concludes that the concepts of assent and parental permission are not mutually exclusive, but rather combine to create a more effective decision-making model that pediatricians and allied health care professionals are in a unique position to foster and assess.

The article by Professor Alicia Ouellette, *Body Modification and Adolescent Decision Making: Proceed with Caution*, then introduces issues relating to adolescents' access to elective medical procedures, or body modification, such as cosmetic surgery, body piercings, and tattoos.⁴² She acknowledges that cosmetic body modification is a prominent part of youth culture in the United States, and as such, merits more attention from the legal community. Ouellette notes that most states permit cosmetic medical procedures with parental consent, while some prohibit body modification in the form of tattoos or body piercings to any individual under age eighteen, regardless of parental consent. She posits that the varied roles of adolescents in our society, as rights-bearing teenagers, as vulnerable children, and as parts of autonomous family units explain the complexity of these laws. Ouellette supports increased decision-making rights for adolescents in the health care context, but argues that cosmetic body modification procedures require greater control of adolescents' decisions because the cognitive deficiencies in adolescents—impulsiveness, susceptibility to peer pressure, and risk-taking behavior—are more prevalent in decisions about body modification than in decisions about medical treatment. Ouellette suggests that adolescents ought to be legally permitted to engage in cosmetic body modification either when they make an informed choice and have parental consent or when they make an informed choice without parental consent and with the support of medical professionals who agree the procedure is immediately necessary to prevent psychological or other harms. She concludes by arguing that parental consent laws are an important protective mechanism, but that they should be limited such that adolescents are not forced into a procedure they do not want and are similarly not prohibited from having a procedure that a medical professional thinks is advisable.

In the final article, *A Choice to Which Adolescents Should not be Exposed: Cosmetic Surgery as Satire*, Dr. Dan O'Connor challenges the concept of "choice"

42. Alicia Ouellette, *Body Modification and Adolescent Decision Making: Proceed with Caution*, 15 J. HEALTH CARE L. & POL'Y 125 (2012).

itself in a trenchant critique of adolescent cosmetic surgery.⁴³ Rather than focusing on adolescents' capacity for making decisions about cosmetic surgery, O'Connor discusses whether adolescents should have the opportunity to make such decisions. Unlike Ouellette, he thinks that cosmetic surgery on adolescents is "ethically illegitimate." In presenting cosmetic surgery as a "satire upon medicine," he argues that cosmetic surgery is an option to which adolescents should not even be exposed. O'Connor presents two ethical issues that, in his view, support keeping cosmetic surgery options away from adolescents—"unjust appearance standards" and the "healing imperative of medicine." He points out that not all exercises in apparent decision making represent true choices. Cosmetic surgery presents adolescents with what he argues is an illusory choice: the false dichotomy that a teen can choose to remain deficient and defective or transform into a socially acceptable member of her sex. O'Connor contends that for adults to condone adolescent cosmetic surgery is for them to subtly "endorse the message that the bullies are right about their bodies." Using cosmetic surgery as the remedy for social or self-inflicted criticism of a teen's body is tantamount to "vaccinat[ing]" her against the epidemic myth of female physical perfection, while also "mak[ing her] into a carrier of it." Instead, O'Connor concludes, adolescents should be protected from cosmetic procedures and perhaps even from information that such procedures are available to them.

The laws relating to adolescent medical decision making are as varied within jurisdictions as they are across those jurisdictions, and the ethical doctrines in this area are in flux. Although there are not distinct fields of "adolescent medical decision-making law or ethics," examining policies in this context provides insight as to how legal and ethical doctrines incorporate and respond to developments in research on human behavior, cognition, and development. We thank the authors in this Issue for their valuable contributions to this conversation, and we hope that these articles initiate a more extensive dialogue about how advances in neuroscience research can inform and shape different policy approaches to adolescent medical decision making.

43. Dan O'Connor, *A Choice to Which Adolescents Should not be Exposed: Cosmetic Surgery as Satire*, 15 J. HEALTH CARE L. & POL'Y 153 (2012).