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Brains Without Money: Poverty as Disabling

EMILY R.D. MURPHY

The United States has long treated poverty and disability as separate legal and social categories, a division grounded in widespread assumptions about the “deserving” and “undeserving” poor. In the case of disability, individuals generally are not thought to be morally responsible for their disadvantage, whereas in the case of poverty, individuals are assumed to be at fault for their disadvantage and are therefore less deserving of aid. This Article argues that recent advances in brain and behavioral science undermine the factual basis for those assumptions. Poverty inhibits brain development during childhood and, later in life, adversely affects cognitive capacities that are key to decision-making and long-term planning. The science of scarcity is complex and ongoing, but its most basic finding is quickly approaching consensus: poverty’s effects in the brain can be disabling.

This Article argues that understanding poverty as disabling has potentially significant implications for policy and doctrine. Viewing poverty as disabling would provide support for poverty programs with less sludge and more money: proposals such as universal basic income, negative income tax, child grants, and greatly simplified benefits determinations. It also reanimates insertion of social welfare concerns into the dominant civil rights framework for disability policy, and it could resolve longstanding tensions between disjointed federal disability laws. In addition, brain and behavioral science may support litigation strategies to compel accessibility to existing systems and potentially help promote a new public understanding of the causes of poverty.

The Article concludes by considering the potential (and significant) downsides of using the lens of science in service of policy: backlash, misunderstanding, and the fragility of relying on nascent science to support fundamentally normative policy goals. One necessary mitigation strategy involves the careful translation of science, including its limitations and residual uncertainties, into legal scholarship, an approach this Article attempts to both articulate and model.

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Brains Without Money: Poverty as Disabling

EMILY R.D. MURPHY *

INTRODUCTION

Over the past decade, a rapidly expanding body of research has probed the relationship between poverty and the brain. Dozens of studies have identified links between childhood poverty and differences in brain structure and growth, while additional studies have demonstrated how scarcity impedes decision-making and cognitive performance. This recent turn to “the neuroscience of poverty” has not escaped the notice of scholars of law and policy. One prominent neuroscientist and ethicist has predicted that brain science will have an “effective and beneficial” influence on social policy, though with caveats given the young state of the field.¹ An education law scholar has proposed a critical re-examination of the main federal law governing special education based on insights from neuroscience.² And one legal scholar has gone so far as to suggest that brain and genetic science provide support for progressive policy interventions designed to reverse the physical effects of inequality.³

Existing predictions and suggestions have not, however, fully appreciated the potentially radical consequences for law and policy that

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¹ Martha J. Farah, *Socioeconomic Status and the Brain: Prospects for Neuroscience-Informed Policy*, 19 NATURE REVIEWS NEUROSCIENCE 428, 428 (2018).

² James E. Ryan, *Poverty as Disability and the Future of Special Education Law*, 101 GEO. L.J. 1455 (2013).

³ Lucy A. Jewel, *The Biology of Inequality*, 95 DENV. L. REV. 609 (2018).

follow from these recent findings. The brain science of poverty—even in its nascent, evolving form—challenges the factual premises underlying the central normative assumption that guides the American legal response to poverty: that the disabled poor and the “merely” poor are different in some way such that the former are deserving of social aid, while the latter are not.⁴

Taking a broad view, persons with disabilities are treated differently under U.S. law (and in the popular zeitgeist) than persons who are “merely” poor. Disability law—while hardly a monolith—partly sounds in the register of civil rights, at least aspiring to incorporate both positive and negative rights.⁵ In contrast, “mere” poverty attaches few positive rights or negative rights: a Sixth Amendment right to counsel when accused of a crime, and some minimal procedural due process rights when losing established welfare benefits.⁶ To take one example of the divergence in treatment, consider cash assistance. On the books, we have separate programs and procedures to provide assistance to those who are “merely” poor (that is, Temporary Aid to Needy Families, colloquially known as “welfare,” and General Assistance laws in some states) and to those who are poor because they are disabled and

⁴ See, e.g., Wendy Bach, *Federalism, Entitlement, and Punishment Across the US Social Welfare State*, in *HOLES IN THE SAFETY NET: FEDERALISM AND POVERTY* 21, 21–22 (Ezra Rosser ed., 2019).

⁵ Samuel R. Bagenstos, *The Future of Disability Law*, 114 *YALE L.J.* 1, 4–8 (2004) (noting that the future of disability law incorporates both positive rights, such as welfare, and negative rights, such as antidiscrimination protections). Some scholars have theorized that the disability rights movement in the United States originated from post-Civil War pension laws that created compensation for select and “worthy disabled.” Peter Blanck, “*The Right to Live in the World*”: *Disability Yesterday, Today, and Tomorrow*, 13 *TEX. J. ON C.L. & C.R.* 367, 368 (2008); see also Jonathan C. Drimmer, *Cripples, Overcomers, and Civil Rights: Tracing the Evolution of Federal Legislation and Social Policy for People with Disabilities*, 40 *UCLA L. REV.* 1341, 1344 (1993). Others have recognized the twentieth century—which included the development of statutes such as the Rehabilitation Act, the Individuals with Disabilities Act, and the Americans with Disabilities Act—as the origin of America’s disability rights framework. See Michael E. Waterstone, *Disability Constitutional Law*, 63 *EMORY L.J.* 527, 529 (2014). Still others have argued that “systemic constitutional litigation” was essential to making progress in the early stages of the disability rights movement. *Id.* at 534. To be sure, disability law is not a silver bullet for rights-claiming, and academics have heavily scrutinized its elements through dozens of articles about the shortcomings of the ADA and the future need for reform. But, even in its current form, federal statutes and litigation have provided a foundation for disability rights—with no analogous foundation for poverty rights. See Craig Konnoth, *The Normative Bases of Medical Civil Rights*, in *DISABILITY, HEALTH, LAW, AND BIOETHICS* 200–01 (I. Glenn Cohen et al. eds., 2020); Craig Konnoth, *Medicalization and the New Civil Rights*, 72 *STAN. L. REV.* 1165, 1168–69 (2020). But see Allison K. Hoffman, *How Medicalization of Civil Rights Could Disappoint*, 72 *STAN. L. REV. ONLINE* 165, 165 (2020); Rabia Belt & Doron Dorfman, *Reweighting Medical Civil Rights*, 72 *STAN. L. REV. ONLINE* 176, 176–77 (2020).

⁶ *Goldberg v. Kelly*, 397 U.S. 254, 261 (1970) (requiring states to provide a pre-termination hearing to public aid recipients prior to the discontinuation of government welfare benefits). For a history of the welfare rights movement, see generally William E. Forbath, *Constitutional Welfare Rights: A History, Critique and Reconstruction*, 69 *FORDHAM L. REV.* 1821 (2001). For a detailed history of how the U.S. Supreme Court has analyzed notions of wealth and democracy in the context of poverty and constitutional law, see Stephen Loffredo, *Poverty, Democracy and Constitutional Law*, 141 *U. PA. L. REV.* 1277, 1278 (1993).

unable to work.⁷ The differences between these two systems—including their different eligibility requirements and levels of support—are at least partly justified by normative beliefs about which reasons for poverty are morally worthy of assistance and by factual beliefs about the reasons disabled and non-disabled persons are unable to work.⁸

While cash assistance represents one instance of the law’s differential treatment of poverty and disability, the distinction extends far beyond entitlements. Persons with disabilities are (under law on the books, at least) entitled to antidiscrimination and other legal protections that “merely” poor people are not: right to counsel in immigration proceedings,⁹ accommodations for access to voting,¹⁰ ineligibility for the death penalty,¹¹ accommodations in

⁷ Matthew Diller, *Entitlement and Exclusion: The Role of Disability in the Social Welfare System*, 44 UCLA L. REV. 361, 373–74 (1996) (referencing JOEL F. HANDLER & YEHESKEL HASENFELD, *THE MORAL CONSTRUCTION OF POVERTY: WELFARE REFORM IN AMERICA* (1991)); MICHAEL B. KATZ, IN *THE SHADOW OF THE POORHOUSE: A SOCIAL HISTORY OF WELFARE IN AMERICA* 33 (1986) (noting that getting welfare benefits was and is designed to be hard because “society has [] sought to uphold the primacy of the market by making the terms of relief onerous and unattractive,” by, for example, remarkable degrees of intrusion into and oversight of an applicant’s life). Here, I refer to Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI), though there are important differences between those programs in theory and in practice. Both programs are administered by the Social Security Administration and use the same standards and work-related criteria to determine disability, which is defined as “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” 42 U.S.C. § 423(d)(1)(A). But the programs are different in their underlying rationales and in their levels of benefits. Essentially, SSDI is social insurance for former workers, and SSI is social welfare for low-income persons (it is means-tested) with disabilities regardless of work history. See Diller, *supra*, at 372–74; see also Mark C. Weber, *Disability Rights, Disability Discrimination, and Social Insurance*, 25 GA. ST. U. L. REV. 575, 583–84 (2009). Doron Dorfman’s ethnographic work has demonstrated the difference in treatment of the recipients of different programs and their lived experiences: “SSI is welfare, so they always treated us like we were suspicious. . . . When I went on to SSDI it was like I entered . . . another world and I could see how the other half lived. . . .” Doron Dorfman, *Re-Claiming Disability: Identity, Procedural Justice, and the Disability Determination Process*, 42 LAW & SOC. INQUIRY 195, 216 (2017) (quoting the experience of “Lisa,” who transitioned from receiving SSI benefits to receiving SSDI benefits).

⁸ Diller, *supra* note 7, at 459–60 (“[T]he exclusivity of the disability category facilitates treatment of inability to work arising from other causes as simply instances of individual moral failing.”); see also Jennifer Pokempner & Dorothy E. Roberts, *Poverty, Welfare Reform, and the Meaning of Disability*, 62 OHIO ST. L.J. 425, 425 (2001) (detailing how poverty and disability are mutually reinforcing of each other and of systemic inequalities along lines of race, gender, and class).

⁹ *Franco-Gonzalez v. Holder*, No. CV-10-02211 DMG (DTBx), 2014 WL 5475097, at *1 (C.D. Cal. Oct. 29, 2014) (issuing and furthering a permanent injunction).

¹⁰ For example, the Voting Rights Act of 1965, Pub. L. No. 89-110, 79 Stat. 437 (codified as amended in scattered sections of 52 U.S.C.); Rehabilitation Act of 1973, Pub. L. No. 93-112, 87 Stat. 355 (codified as amended in scattered sections of 29 U.S.C.); Voting Accessibility for the Elderly and Handicapped Act, Pub. L. No. 98-435, 98 Stat. 1678 (codified as amended at 52 U.S.C. §§ 20101–20107); and Help America Vote Act of 2002, Pub. L. No. 107-252, 116 Stat. 1666 (codified as amended at 52 U.S.C. §§ 20901–21145) all provide a framework of accommodations for the disabled to vote in elections. The relative comprehensiveness of these statutory accommodations has received scrutiny. Rabia Belt, *Contemporary Voting Rights Controversies Through the Lens of Disability*, 68 STAN. L. REV. 1491, 1498–1505 (2016).

¹¹ *Atkins v. Virginia*, 536 U.S. 304, 321 (2002).

employment,¹² antidiscrimination protections in employment and access to public services,¹³ and access to special education,¹⁴ to name a few. Merely being poor entitles a person to none of these protections because civil rights laws assume that mere poverty has not excluded people from the basic rights of citizenship such that accommodations are needed to level the playing field.

The brain science of poverty suggests that the factual premise on which the distinction between the legal (and social) categories of poverty and disability depends—that the “merely” poor possess all the tools needed to navigate complex systems and succeed in the labor marketplace, while the disabled do not—is not accurate. When considered through the lens of emerging research on brain development and cognitive function in conditions of poverty, the distinction between the socio-cultural-legal categories of disability and poverty is not so clear cut.¹⁵ More than just a risk factor for a given individual’s recognizable disability, poverty may impact many people in ways that are invisible, subtle, and easy to overlook.¹⁶ The central task of this Article is to defend this claim and explore the potentially far-reaching consequences for law and policy that follow from it.

This Article proceeds in four parts. Part I briefly establishes that the law treats poverty differently than disability as a categorical matter.¹⁷ These

¹² Americans with Disabilities Act of 1990 (ADA) tit. I, 42 U.S.C. §§ 12111–12117.

¹³ *Id.*; ADA tit. II, 42 U.S.C. §§ 12131–12165.

¹⁴ For example, poor children are excluded from receiving special education under the main federal law that governs special education if their “learning problem . . . is primarily the result . . . of environmental, cultural, or economic disadvantage.” Ryan, *supra* note 2, at 1456, 1457–58 (quoting Individuals with Disabilities Education Act (IDEA), 20 U.S.C. § 1401(30)(C)).

¹⁵ This is not solely a claim within the “medical model” of disability, though it sounds so first and foremost. From the medicalized grounding, it extends the claim that poverty is disabling when disability is understood as a social construct. *See infra* Part III. But it does not go so far as to claim that poverty is inherently incapacitating and warrants paternalistic interventions such as conservatorship or loss of parental rights. The “disabling” nature of poverty, as discussed in Part III, is generally consistent with the ADA’s functional definition of “impairment that substantially limits one or more major life activities,” rather than with a specific diagnosis or condition or the Social Security Administration’s inability-to-work standard. *See infra* Part III; 42 U.S.C. § 12102(1)(A). In terms of impact, cognitive impairment caused by poverty is likely most analogous to mild-to-moderate learning disabilities and/or the cognitive effects of mild-to-moderate mental illness such as anxiety and depression. *See infra* Part III. One immediate example of this is the recent finding that COVID-related stimulus payments reduced symptoms of anxiety and depression—mental health conditions that can be, and are, recognized as disabling—by over twenty percent. PATRICK COONEY & H. LUKE SHAEFER, POVERTY SOLS. AT THE UNIV. OF MICH., MATERIAL HARDSHIP AND MENTAL HEALTH FOLLOWING THE COVID-19 RELIEF BILL AND AMERICAN RESCUE PLAN ACT 8 (2021), <http://sites.fordschool.umich.edu/poverty2021/files/2021/05/PovertySolutions-Hardship-After-COVID-19-Relief-Bill-PolicyBrief-r1.pdf>.

¹⁶ *See* Jasmine E. Harris, *Taking Disability Public*, 169 U. PA. L. REV. 1681, 1695 n.55 (2021) (noting that disability and poverty both were proxies “[used] to regulate other disfavored identities”).

¹⁷ Poverty and disability are far from mutually exclusive, and they frequently intersect. *See, e.g.*, Pokempner & Roberts, *supra* note 8, at 426–27; Henry J. Whittle et al., “*The Land of the Sick and the Land of the Healthy*”: *Disability, Bureaucracy, and Stigma Among People Living with Poverty and Chronic Illness in the United States*, 190 SOC. SCI. & MED. 181, 182 (2017) (reporting the lived

categorical distinctions track social and cultural assumptions about causality and fault, which serve to ground claims about poor and disabled persons' relative moral deservingness of legal support and protection. Part II invites reconsideration of these factual premises by reviewing recent research in brain and behavioral science. In short, this research shows that poverty is bad for the brain in ways that meaningfully affect people's capacities (consistent with the medical model of disability), and poverty also determines how consequentially those "impairments" impact peoples' lives (consistent with the social model of disability). Drawing on research on both childhood brain development and cognitive processing capacities in adult decision-making, I argue that, while perfect certainty about causality is not yet available, the weight of the scientific evidence supports the assertion that poverty causes cognitive deficits and exacerbates their functional impact. This stands in opposition to the claim, put forward by social selection theorists, that innate cognitive capacities lead to failure in the labor market and the perpetuation of poverty.¹⁸ Part III lays out the potential consequences that these findings could have for law and policy. In addition to inviting reconsideration of significant legal structures, brain and behavioral science may support litigation strategies to compel accessibility to existing systems serving the poor, and brain-centered rhetoric might also support revised public understanding of poverty. Part IV considers the potentially significant downsides of using brain science—even as a framing device—in service of policy goals: backlash, misunderstanding, and the fragility of relying on nascent science that may change.

In its method, this Article is an effort to firmly cement norms in legal scholarship about appropriately integrating brain and behavioral science into legal and policy claims. To that end, it eschews the cherry-picking of single scientific studies, avoids essentializing "brain-based" claims as inherent sources of "biological" truth, and recognizes the risks inherent in building social policy on evolving scientific understanding. This Article draws upon literature in disability legal studies and poverty law, and it nods towards other essential bodies of work in critical theory, civil rights, and social theory, though it does so within space constraints in an already broad interdisciplinary sweep. Its primary focus is on brain and behavioral science, exploring one example of how insights from those fields should be synthesized and brought to bear on societal and legal assumptions about

experience of persons receiving disability benefits and facing a chronic health condition, through the lens of the stigmatizing discourses associated with poverty and disability).

¹⁸ See Amy L. Wax, *The Poverty of the Neuroscience of Poverty: Policy Payoff or False Promise?*, 57 JURIMETRICS 239, 241, 284 (2017). Wax calls the body of scientific work "deprivation neuroscience." *Id.* at 284. Wax argues that the neuroscientific research cannot establish causation to rule out the mechanism that poor people have cognitive difficulties, and thus remain poor, *because of* innate genetic endowments. *Id.* at 241. Not only do I dispute her interpretation of the available neuroscientific research, but I argue that her counterfactual claim is also without sufficient evidence. See *infra* Part III.

human behavior and which normative implications may follow from a more accurate understanding of behavior mechanisms and capacities.¹⁹

I. SEPARATE CATEGORIZATIONS OF POVERTY AND DISABILITY TRACK ASSUMPTIONS ABOUT HUMAN CAPABILITY AND DESERVINGNESS

As the claims in this Article are primarily conceptual and attempt to integrate ideas across a wide range of subject matter, I deliberately define “poverty” and “disability” at a high level of generality. Poverty and disability are currently conceptualized in U.S. law (and society) as independent categories, though they are highly intersectional in lived experience and can be mutually generative and reinforcing.²⁰

Treating “disability” at a high level of generality, however, risks obscuring the important distinctions in disability civil rights laws and economic rights, such as social insurance. These “disability” laws are different in kind—they have different definitions of disability, different purposes, and different underlying theories.²¹ There is ongoing tension between them.²² This distinction, however, is elided in public imagination,²³ particularly along the

¹⁹ For a map of the larger interdisciplinary normative project, see Emily R.D. Murphy, *Collective Cognitive Capital*, 63 WM. & MARY L. REV. 1347, 1351-58 (2022).

²⁰ See, e.g., Rebecca Yeo & Karen Moore, *Including Disabled People in Poverty Reduction Work: “Nothing About Us, Without Us”*, 31 WORLD DEV. 571, 571-72 (2003) (detailing how discrimination and disability lead to poverty and how poverty leads to disability, both mediated through exclusion from social and institutional support); Pokempner & Roberts, *supra* note 8, at 426-27 (detailing how poverty and disability are mutually reinforcing of each other and of systemic inequalities along lines of race, gender, and class); Nancy E. Adler & Joan M. Ostrove, *Socioeconomic Status and Health: What We Know and What We Don’t*, 896 ANNALS N.Y. ACAD. SCIS. 3, 11 (1999); Katherine Seelman & Sean Sweeney, *The Changing Universe of Disability*, 21 AM. REHAB. 2, 2 (1995) (noting “changing causes and patterns” of disability that emphasize the association between poverty and disability); Sagit Mor, *Disability and the Persistence of Poverty: Reconstructing Disability Allowances*, 6 NW. J.L. & SOC. POL’Y 178, 182 (2011) (identifying the “overlap approach” as the separation of poverty and disability as co-occurring but distinct categories, in contrast to the “constitutive approach” which invites critique of categorical boundaries); SHAWN FREMSTAD, CTR. FOR ECON. & POL’Y RSCH, HALF IN TEN: WHY TAKING DISABILITY INTO ACCOUNT IS ESSENTIAL TO REDUCING INCOME POVERTY AND EXPANDING ECONOMIC INCLUSION *passim* (2009) (arguing that research and policy debate about income poverty must engage with disability); Jacobus tenBroek & Floyd W. Matson, *The Disabled and the Law of Welfare*, 54 CALIF. L. REV. 809, 809 (1966) (“Not only does poverty breed illness and disability; disability in turn begets poverty.”).

²¹ See *supra* note 7 and accompanying text. Economic rights disability laws, under the umbrella of the Social Security Administration, can be understood as related to a person’s ability to produce value for capitalism. See generally FRANCES FOX PIVEN & RICHARD A. CLOWARD, *REGULATING THE POOR: THE FUNCTIONS OF PUBLIC WELFARE* (updated ed., 1993); MARTA RUSSELL, *CAPITALISM & DISABILITY: SELECTED WRITINGS BY MARTA RUSSELL* (Keith Rosenthal ed., 2019).

²² Weber, *supra* note 7, at 583-84; see also Matthew Diller, *Dissonant Disability Policies: The Tensions Between the Americans with Disabilities Act and Federal Disability Benefit Programs*, 76 TEX. L. REV. 1003, 1005-10 (1998) (describing the history of the ADA and its different conceptions of disability from disability benefit programs, and the incoherent resulting attempts to categorize people with disabilities).

²³ See Michael E. Waterstone, *The Costs of Easy Victory*, 57 WM. & MARY L. REV. 587, 595 (2015)

dimension of “deservingness.”²⁴ While “disability law” is not a monolith, the (non-disabled) public’s conception of “disability” as a category may be closer to a unitary concept.

This coarse-grained approach enables consideration of a range of heterogeneous laws, social constructs, and the consequences of both. The aim is to bridge the legal and the scientific with a conceptual framework that provides a starting point for future, deeper investigations.

A. Poverty and Disability as Distinct Legal Categories

This section briefly establishes the premise that, as a matter of positive law, “mere” poverty (or socioeconomic status) is treated differently from disability. One unambiguous instance of this division is found within the texts of relevant statutes and regulations that exclude socioeconomic status from the definition of disability. The Americans with Disabilities Act (ADA)²⁵ and Section 504 of the Rehabilitation Act²⁶ define disability in functional terms (that is, as an “impairment that substantially limits one or more major life activities”²⁷), as well as in terms of perception (meaning that an individual is “regarded as having such an impairment”²⁸). The ADA’s original implementing regulations, however, exclude “environmental, cultural, economic, or other disadvantages, such as having a prison record, or being poor,”²⁹ as does the Rehabilitation Act.³⁰ The Individuals with Disabilities Education Act (IDEA) lists thirteen categories of disability,

(“Unguided by a public conflict over these transformational aspirations, awareness of disability rights—to the extent there is such awareness at all—remains rooted in a vision of special rights, not civil rights.”).

²⁴ Doron Dorfman has documented how suspicion of “abuse of disability laws and rights . . . cuts across venues and contexts.” Doron Dorfman, *Fear of the Disability Con: Perceptions of Fraud and Special Rights Discourse*, 53 LAW & SOC’Y REV. 1, 5 (2019) [hereinafter Dorfman, *Fear of the Disability Con*]. His data demonstrate that the public fears the “disability con” in contexts of both civil rights accommodations, such as ADA mandated parking spots, and economic rights, such as Social Security Disability benefits. *Id.* at 15–16. In subsequent work, he demonstrates that it is the public’s sense of the “deservingness” of a person with a disability, rather than the level of scarcity of public resources, that drives this suspicion and thus the lived experience of persons with disabilities. Doron Dorfman, *[Un]Usual Suspects: Deservingness, Scarcity, and Disability Rights*, 10 U.C. IRVINE L. REV. 557, 579 (2020) [hereinafter Dorfman, *[Un]Usual Suspects*].

²⁵ See generally 42 U.S.C. §§ 12101–12213.

²⁶ Rehabilitation Act of 1973, Pub. L. No. 93-112, § 504, 87 Stat. 355 (1973) (current version at 29 U.S.C. § 794).

²⁷ 42 U.S.C. § 12102(1)(A).

²⁸ *Id.* § 12102(1)(C).

²⁹ Nondiscrimination on the Basis of Disability in State and Local Government Services, 56 Fed. Reg. 35,694, 35,698, 35,699 (July 26, 1991) (to be codified at 28 C.F.R. pt. 35) (emphasis added). The implementing regulations were not updated in the ADA Amendments Act of 2008, Pub. L. No. 110-325, 122 Stat. 3553 (codified in scattered sections of 42 U.S.C.).

³⁰ Equal Employment Opportunity for Individuals With Disabilities, 56 Fed. Reg. 35,726, 35,741 (July 26, 1991) (to be codified at 29 C.F.R. pt. 1630) (“Environmental, cultural, or economic disadvantages such as poverty, lack of education or a prison record are not impairments.”).

including “intellectual disabilities” and “specific learning disabilities,”³¹ but the statute explicitly excludes “a learning problem that is primarily the result of . . . environmental, cultural, or *economic* disadvantage.”³²

Thus, the drafters of civil rights disability statutes and their implementing regulations considered and rejected the notion that poverty should be considered a disability. This choice was deliberate. Advocates of the ADA understood the political importance of distinguishing their project from a benefit or welfare system for the “merely” poor. They avoided media attention at the time of the law’s passage because they believed that the media portrayal of disability as “a pitiful state that needs to be overcome at any cost” was “exactly what they hoped to avoid by enacting a civil rights law (as opposed to a benefit or welfare system).”³³

As noted above, the distinction between poverty and disability is also apparent in the separate administrative systems of resource distribution for disability (and the poverty caused by disability) and “mere” poverty. Most significantly, Social Security Disability Insurance (SSDI) payments to persons unable to work are made under the social insurance model, which is distinct from means-tested “welfare” benefits such as Temporary Aid to Needy Families (TANF) and Supplemental Nutrition Assistance Program (SNAP) benefits (colloquially, “food stamps”).³⁴ This is not to say that, in practice, persons with disabilities have an easier time accessing benefits than persons receiving welfare.³⁵ It is to say that the United States has developed entirely distinct systems for administering benefits to persons with disabilities and persons who are “merely” poor. In public discourse, these

³¹ 20 U.S.C. § 1401(3)(A)(i).

³² *Id.* § 1401(30)(C) (emphasis added).

³³ Rabia Belt & Doron Dorfman, *Disability, Law, and the Humanities: The Rise of Disability Legal Studies*, in THE OXFORD HANDBOOK OF LAW AND HUMANITIES 155 (Simon Stern, Maksymilian Del Mar & Bernadette Meyler eds., 2020).

³⁴ See *infra* notes 315–317 and accompanying text. See, e.g., Belt & Dorfman, *supra* note 5, at 181–82 (explaining that the “apparent generosity” of disability law is “belied by the reality in practice,” evidenced in part by the decline in applications for Social Security disability benefits, which may be the result of difficulties in applying and qualifying for benefits or in appealing rejections, including the intense scrutiny that claimants must endure). See generally Bach, *supra* note 4, at 21–22 (“In short, programs are called ‘welfare’ . . . when what is really meant is that we wish to use the administrative mechanisms of federalism to control, stigmatize, punish, and deter recipients. In contrast, when we perceive recipients as entitled, these mechanisms fall away to be replaced by purely federally controlled, far less visible, and far more inviting administrative structures.”); Dorfman, *supra* note 7 (detailing the experiences of people with disabilities navigating the process of Social Security benefits); Elizabeth F. Emens, *Disability Admin: The Invisible Costs of Being Disabled*, 105 MINN. L. REV. 2329, 2331–33 (2021) (detailing the extensive experiences of people with disabilities managing their “life admin,” including the bureaucratic burdens of applying for and maintaining disability benefits).

³⁵ In both systems, there is not enough money or resources, and, particularly in the disability realm, the enactment of civil rights laws has done little to change the strong identification of disability as the functional incapacity to work. See, e.g., Konnoth, *supra* note 5, at 1228 (observing that “problems framed as medical are relatively insulated from political tides,” citing as a primary example the 1990s cuts to welfare programs but not to disability insurance programs).

categories have historically been closely tied to medicalization, fault, and deservingness (all against the backdrop of capitalism's need for labor).³⁶ More recently, these broad categorical distinctions have been justified as an effort to limit the size of the populations served, thereby conserving resources. But, they continue to reflect originating assumptions about the different causes and of motivations for behavior by persons in poverty and persons with disabilities.³⁷ As a consequence of the increasingly restrictive welfare policies adopted in the 1980s and 90s, a population of impoverished people moved from the welfare system to the disability system.³⁸ Indeed, what makes this discussion particularly timely is that the rise in “stigmatizing public discourses on ‘disability fraudsters’ and ‘malingerers’” that has accompanied the “replace[ment]” of persons on welfare by persons with disabilities can be understood as the “latest manifestation of the recurring specter of the ‘undeserving poor.’”³⁹

Special education law is another domain in which disability is treated as distinct from poverty, which is carved out as a non-protected category.⁴⁰ James Ryan has recently analyzed the exclusionary clause of IDEA, which excludes from its coverage children who perform poorly in school “primarily [as] the result of . . . environmental, cultural, or economic disadvantage.”⁴¹ Professor Ryan critiques this clause on the grounds that emerging brain science shows that the neural mechanisms of “organic” learning disabilities are substantially the same as the neural mechanisms of academic deficits attributed to poverty.⁴² In other words, the brains of poor children struggling in school are fundamentally like the brains of middle-class children with recognized “real” learning disabilities when it comes to explaining the academic underperformance of each group. Professor Ryan argues that the exclusionary clause of the IDEA is thus indefensible, as it is

³⁶ DEBORAH A. STONE, *THE DISABLED STATE* 55 (1984) (summarizing the history of the English Poor Laws as resulting in categorical classification as the remedy for providing social aid for the needy and labor for society); *id.* at 68–89 (describing the origins and medicalization inherent in the United States’ Social Security Disability Insurance Program); *id.* at 90–99 (discussing the evolving conceptions of medical conditions and fault).

³⁷ Whittle et al., *supra* note 17, at 182–83; Mor, *supra* note 20, at 182–86; *see also* STONE, *supra* note 36, at 3–12 (describing the history of the English Poor Laws as attempting to distinguish between the poor who were deserving of support from the state and the undeserving poor who were expected to work).

³⁸ The hollowing out of state and federal welfare programs starting in the late 1980s and culminating in the Personal Responsibility and Work Opportunity Reconciliation Act of 1996—promised by President Clinton to “end welfare as we know it”—has had the effect of leaving “federal disability benefits [such as SSI and SSDI] as the last form of substantial government cash assistance available to many indigent US adults.” Whittle et al., *supra* note 17, at 182.

³⁹ *Id.*; *see also* Helena Hansen, Philippe Bourgois & Ernest Drucker, *Pathologizing Poverty: New Forms of Diagnosis, Disability, and Structural Stigma Under Welfare Reform*, 103 SOC. SCI. & MED. 76, 76 (2014); Dorfman, *Fear of the Disability Con*, *supra* note 24, at 1, 3–6.

⁴⁰ Ryan, *supra* note 2, at 1457–60.

⁴¹ 20 U.S.C. § 1401(30)(C).

⁴² Ryan, *supra* note 2, at 1491–94.

based on assumptions that are scientifically incoherent,⁴³ a claim upon which this Article builds and expands.

B. *Distinctions Arise from Assumptions About Fault-Based Deservingness*

Assumptions about behavioral causation play an important role in the design of legal categories.⁴⁴ Put simply, many policies implicitly assign varying degrees of moral blame to individuals based on the legal or social category to which they are assigned. In the cultural milieu of the United States, some poor are thought to be deserving, while others are not.⁴⁵ Social science data demonstrates that the “merely” poor are perceived by the general public as low in competence and lacking warmth, and they consistently elicit reactions of contempt because their situation is perceived as controllable.⁴⁶ By contrast, the “disabled” are perceived as low in competence but high in warmth, and they consistently elicit pity because their situation is appraised as beyond their control.⁴⁷

While poverty and class are targets for assigning blame to individuals, medicalized disabilities are relatively—though not entirely⁴⁸—insulated from the same type of judgment and stigmatization.⁴⁹ This division is explained by

⁴³ *Id.* at 1491–96.

⁴⁴ See Konnoth, *supra* note 5, at 201–05 (recounting how agreed-upon notions of luck and fault were embedded into the post-New Deal creation and passage of monumental social welfare programs, such as Social Security legislation, unemployment legislation, and Medicare).

⁴⁵ Paul K. Piff et al., *Shifting Attributions for Poverty Motivates Opposition to Inequality and Enhances Egalitarianism*, 4 NATURE HUM. BEHAV. 496, 496 (2020); see also Daniel S. Goldberg, *Doubt & Social Policy: The Long History of Malingering in Modern Welfare States*, 49 J.L. MED. & ETHICS 385, 385–86 (2021) (tracing the history of social policy and its roots in anxiety about malingering and deception); Khiara M. Bridges, *The Deserving Poor, the Undeserving Poor, and Class-Based Affirmative Action*, 66 EMORY L.J. 1049, 1076 (2017) (theorizing that the “deserving poor” are those who are “poor through no fault of their own . . . [and] indigent because of unfortunate or inevitable circumstances—because they were born disabled or became disabled The deserving poor are mired in poverty because of forces that are much larger and more powerful than they are.”) This cultural milieu also shapes public perceptions and policy. See Robert A. Moffitt, *The Deserving Poor, the Family, and the U.S. Welfare System*, 52 DEMOGRAPHY 729, 729–30 (2015) (suggesting that while domestic welfare spending has increased in the past sixty years, it has redistributed towards elderly persons and the disabled, and it reflects societal conceptualizations of which poor are deserving and which are not); Dorothy A. Brown, *Race and Class Matters in Tax Policy*, 107 COLUM. L. REV. 790, 819–26 (2007) (suggesting that original iterations of the Earned Income Tax Credit (EITC) were politically unpopular because they benefitted the “undeserving” poor, and the only way to make the EITC politically viable was to reframe it as a program that assisted the deserving poor); Pokempner & Roberts, *supra* note 8, at 426. See generally MICHAEL B. KATZ, *THE UNDESERVING POOR: AMERICA’S ENDURING CONFRONTATION WITH POVERTY* (2d ed. 2013).

⁴⁶ See, e.g., Amy J. C. Cuddy, Susan T. Fiske & Peter Glick, *The BIAS Map: Behaviors from Intergroup Affect and Stereotypes*, 92 J. PERSONALITY & SOC. PSYCH. 631, 632, 638 (2007).

⁴⁷ *Id.* at 632.

⁴⁸ See, e.g., Diller, *supra* note 7, at 384–92.

⁴⁹ See generally Konnoth, *supra* note 5, at 1165–66, 1174–75. Social science research demonstrates that, in industrialized Western countries, persons with disabilities are considered highly deserving of social protection. See, e.g., Wim van Oorschot & Femke Roosma, *The Social Legitimacy of Targeted Welfare and Welfare Deservingness*, in *THE SOCIAL LEGITIMACY OF TARGETED WELFARE: ATTITUDES TO WELFARE DESERVINGNESS* 13–15 (Wim van Oorschot et al. eds., 2017).

the fact that judgments of moral deservingness in law and policy tend to track beliefs about the extent to which individuals are responsible for their own misfortune. Specifically, attributions of individual fault tend to limit positive rights, while attributions of luck or external factors tend to support the expansion of positive rights, based on an entrenched legal ethic of luck egalitarianism—the idea that it is unjust or unfair if some people are worse off than others through no fault or choice of their own.⁵⁰ Implicit assumptions about causality thus matter greatly in attributions of deservingness.

A variety of sources support this claim, which itself is the subject of extensive literature. However, the claim is sufficiently well-established such that, for the purpose of the remainder of this Article, it requires no more than a few brief examples. We can find these examples in statements by legislators surrounding the enactment of the relevant laws, as well as in the social norms expressed by contemporaneous media and political discourse.

1. *Assumptions in Law*

There is a complex and well-documented legislative history of the relationship between disability, economic disadvantage, and public benefits. Matthew Diller argues that the dichotomy between the federal social insurance model (for certain disability and unemployment benefits) and the public assistance model (for welfare benefits) is best explained by divergent judgments regarding causation and fault in the two domains. The former is intended for the “worthy” poor, who are out of work for reasons not perceived to be their (moral) fault.⁵¹ By tracking the historical development of social insurance and public assistance systems, Professor Diller makes a powerful case that the narrow, medically determined definition of disability used by the Social Security Administration is meant to provide:

[T]he public with an assurance that the disability category will be contained, and its threat to the market economy and the work ethic will be limited. . . . [T]he exclusivity of the disability category facilitates treatment of inability to work arising from other causes as simply instances of individual moral failing.⁵²

It is for this reason that eligibility criteria for disability benefit programs, such as SSI, “are designed to track public conceptions of the ‘worthy’ poor,

⁵⁰ Konnoth, *supra* note 5, at 1222–23; Carl Knight, *Luck Egalitarianism*, 8 PHIL. COMPASS 924, 924 (2013); *see also* Diller, *supra* note 7, at 457–58.

⁵¹ Diller, *supra* note 7, at 385–94 (“[I]n the case of disability, inability to work is generally not perceived as the fault of the disabled individual.”). Professor Diller’s article also describes how the structure of public assistance in the U.S. reflects moral judgments about the primacy of the free market. *Id.* at 372–76.

⁵² *Id.* at 459–60.

rather than the range of socio-economic problems that lead many people with disabilities to need benefits.”⁵³

Disability law in the United States is not uniform, and incoherence and tensions remain between the social insurance model of benefits distribution and the civil rights model of anti-discrimination.⁵⁴ Yet, the passage of the ADA was similarly justified by an appeal to the ethics of individual responsibility. Samuel Bagenstos has comprehensively documented how the ADA was sold to the public as a version of welfare reform, the purpose of which was to provide accommodations in order to move people off of the welfare rolls and into the workforce.⁵⁵ Speaking the language of market fundamentalism, the “godfather of the ADA” testified that the bill would enable persons with disabilities to become “self-reliant” and avoid “the economic and *moral disasters* of giant, paternalistic welfare bureaucracies” that keep people in “unjust, unwanted dependency.”⁵⁶ Numerous scholars have argued that the Supreme Court jurisprudence interpreting (and limiting) the reach of the ADA prior to the law’s 2008 amendments can be understood as the product of this fault-based reasoning.⁵⁷ The final negotiated version of the ADA also excluded from its coverage behavior thought to be volitional and “lack[ing] any physiological basis,” because “people must bear some responsibility for the consequences of their own actions.”⁵⁸

⁵³ *Id.* at 461. Different types of disabilities are treated differently by society at large and experts based on moral dimensions including whether the person was responsible for their own impairment (by, for example, drinking or drug use) and the attributed legitimacy of their condition. See GARY L. ALBRECHT, *THE DISABILITY BUSINESS: REHABILITATION IN AMERICA* 76 (1992).

⁵⁴ Weber, *supra* note 7, at 575–76; see also Bagenstos, *supra* note 5, at 3–5.

⁵⁵ Samuel R. Bagenstos, *The Americans with Disabilities Act as Welfare Reform*, 44 WM. & MARY L. REV. 921, 926–27 (2003).

⁵⁶ *The Americans with Disabilities Act of 1989: Joint Hearing on H.R. 2273 Before the Subcomms. on Select Educ. & Emp. Opportunities of the H. Comm. on Educ. & Lab.*, 101st Cong. 57–58 (1989) (statement of Justin Dart, Jr., Chairman, Task Force on the Rights and Empowerment of Americans with Disabilities) (emphasis added); see also THOMAS F. BURKE, *LAWYERS, LAWSUITS, AND LEGAL RIGHTS: THE BATTLE OVER LITIGATION IN AMERICAN SOCIETY* 96–97 (2002).

⁵⁷ Bagenstos, *supra* note 55, at 977. Professor Bagenstos argues that the definition-of-disability cases that seem at odds with the ADA’s civil rights purposes are readily understandable from the perspective that the statute should not benefit those who are able to work *generally*, even if not in their prior job or preferred profession. *Id.* See generally Ruth Colker, *The Americans with Disabilities Act: A Windfall for Defendants*, 34 HARV. C.R.-C.L. L. REV. 99 (1999); Ruth Colker, *Winning and Losing Under the Americans with Disabilities Act*, 62 OHIO ST. L.J. 239 (2001).

⁵⁸ See Konnoth, *supra* note 5, at 208 (quoting 135 Cong. Rec. S10796 (daily ed. Sept. 1989) (statement of Sen. Warren B. Rudman), in which conservative Senator Rudman speaks to some conditions that are excluded from the ADA’s coverage); 42 U.S.C. § 12211(b) (excluding from the ADA’s coverage “transvestism, transsexualism, pedophilia, exhibitionism, voyeurism, gender identity disorders not resulting from physical impairments, or other sexual behavior disorders; compulsive gambling, kleptomania, or pyromania; or psychoactive substance use disorders resulting from current illegal use of drugs”).

2. *Assumptions in Society*

Stereotypes and assumptions about people who are poor are endemic in American culture. The “welfare queen” remains a persistent negative stereotype,⁵⁹ and it is commonly assumed that poor people lack the intelligence, self-discipline, and inclination to resist “bad” or impulsive life choices⁶⁰—that is, that they are inherently less competent or lacking in motivation in ways that render them undeserving of financial assistance.⁶¹ Social science data also confirms that people tend to attribute poverty to causes that are dispositional and individualistic, rather than situational and structural, and therefore tend to blame poor persons themselves for being impoverished.⁶² These assumptions have contributed to the overall criminalization of poverty—the

⁵⁹ KAARYN S. GUSTAFSON, CHEATING WELFARE: PUBLIC ASSISTANCE AND THE CRIMINALIZATION OF POVERTY 15, 34–36, 151–53 (2011); Catherine Powell & Camille Gear Rich, *The “Welfare Queen” Goes to the Polls: Race-Based Fractures in Gender Politics and Opportunities for Intersectional Coalitions*, 108 GEO. L.J. 105, 115–30 (2020).

⁶⁰ For example, in March 2017, then-Representative Jason Chaffetz (R-UT) quipped that Americans may need to choose between getting a “new iPhone that they just love” and obtaining health insurance. Philip Bump, *Jason Chaffetz’s iPhone Comment Revives the ‘Poverty is a Choice’ Argument*, WASH. POST (Mar. 7, 2017), <https://www.washingtonpost.com/news/politics/wp/2017/03/07/jason-chaffetz-iphone-comment-revives-the-poverty-is-a-choice-argument/>.

⁶¹ See KATZ, *supra* note 45, at 1–3; see also Amy L. Wax, *Rethinking Welfare Rights: Reciprocity Norms, Reactive Attitudes, and the Political Economy of Welfare Reform*, 63 LAW & CONTEMP. PROBS. 257, 271 (2000) (citing MARTIN GILENS, WHY AMERICANS HATE WELFARE: RACE, MEDIA, AND THE POLITICS OF ANTIPOVERTY POLICY 2–3 (1999), who concludes that “the focus of considerable public anger and resentment is not the *principle* of government support for the needy, but the perception that most people currently receiving welfare are undeserving”).

⁶² See, e.g., Matthew O. Hunt & Heather E. Bullock, *Ideologies and Beliefs About Poverty*, in THE OXFORD HANDBOOK OF THE SOCIAL SCIENCE OF POVERTY 93–94 (David Brady & Linda M. Burton eds., 2016); Patricia Homan, Lauren Valentino & Emi Weed, *Being and Becoming Poor: How Cultural Schemas Shape Beliefs About Poverty*, 95 SOC. FORCES 1023, 1025–29 (2017); Catherine Cozzarelli, Anna V. Wilkinson & Michael J. Tagler, *Attitudes Toward the Poor and Attributions for Poverty*, 57 J. SOC. ISSUES 207, 209–10 (2001). Op-eds in the nation’s major newspapers also confirm mainstream views that persons in poverty are individually responsible for their status. *New York Times* columnist David Brooks wrote in May 2015 that federal spending on antipoverty programs has been ineffective because “the real barriers to mobility are matters of social psychology, the quality of relationships in a home and a neighborhood that either encourage or discourage responsibility, future-oriented thinking, and practical ambition.” David Brooks, *The Nature of Poverty*, N.Y. TIMES (May 1, 2015), <https://www.nytimes.com/2015/05/01/opinion/david-brooks-the-nature-of-poverty.html>. *Washington Post* columnist George Will recapitulated Daniel Patrick Moynihan’s fifty-year old thesis in March 2015, stating that “[p]erhaps the decisive factors in combating poverty and enabling upward mobility were not economic but cultural—the habits, mores and dispositions that equip individuals to take advantage of opportunities.” George F. Will, *What Patrick Moynihan Knew About the Importance of Two Parents*, WASH. POST (Mar. 13, 2015), https://www.washingtonpost.com/opinions/what-patrick-moynihan-knew-about-the-importance-of-two-parents/2015/03/13/2cdf9bae-c9a4-11e4-aa1a-86135599fb0f_story.html. For a comment on how such attitudes have driven legal scholarship on inequality to avoid engagement with claims that attribute resource disparity to culture, in order to further avoid victim-blaming, see Lucille A. Jewel, *Merit and Mobility: A Progressive View of Class, Culture, and the Law*, 43 U. MEMPHIS L. REV. 239, 256 (2012) (“For progressives seeking to theorize about social inequality and social change, ‘culture’ has become somewhat of an anathema” because of the conservative co-option of cultural explanations for poverty that use a “blame the victim” approach, which attributes poverty to “defective individual cultural choices rather than focusing on structural realities.”).

“stigmatization, surveillance, and regulation of the poor”⁶³—and the resulting relegation of the poor to “an inferior status of rights-bearing citizenship,” extensively documented by Kaaryn Gustafson.⁶⁴

While these assumptions are partly grounded in American cultural predispositions and the “neoliberal emphasis on work,”⁶⁵ they also likely derive from ingrained patterns of thinking known as the “fundamental attribution error,” which is the tendency to see the behavior of others as being determined by character, while simultaneously believing one’s own behavior as being determined by circumstance.⁶⁶ This belief—that the poor are, by their own failures, primarily responsible for their condition—informs and often undermines political support for social provisions that aim to reduce or ameliorate the effects of poverty. For example, survey data indicates that Americans prefer in-kind redistribution over cash transfers to the poor, primarily because they believe that the poor will not spend cash on the “right” things.⁶⁷ Moreover, experimental evidence demonstrates that manipulating peoples’ beliefs about the causes of poverty, so that they place less weight on individual choices and greater weight on situational forces, increases their intolerance of inequality and their willingness to combat it.⁶⁸

In contrast, political and cultural beliefs about persons with disabilities have tended to be more generous and sympathetic, even while being stigmatizing and patronizing.⁶⁹ The passage of the ADA was supported in part by a “discourse of pity, charity, and admiration,” with polling at the time showing that the “overwhelming majority of Americans viewed disability in precisely these terms of pity, charity, and inspirational overcoming.”⁷⁰ Persons with disabilities still face persistent bias, stereotypes, mistreatment, and discrimination, notwithstanding the broad civil rights laws on the books, but they are not (at least in most cases) blamed for causing their situation and denied aid on that basis.⁷¹

What follows in Part II is an examination of the state of the brain and the behavioral science of poverty and low SES, which addresses the causal

⁶³ Kaaryn Gustafson, *The Criminalization of Poverty*, 99 J. CRIM. L. & CRIMINOLOGY 643, 647 (2009).

⁶⁴ *Id.* at 643.

⁶⁵ Heather E. Bullock, Gabriel H. J. Twose & Veronica M. Hamilton, *Mandating Work: A Social Psychological Analysis of Rising Neoliberalism in U.S. Public Assistance Programs*, 19 ANALYSES SOC. ISSUES & PUB. POL’Y 282, 282 (2019).

⁶⁶ See, e.g., Maia Szalavitz, *Why Do We Think Poor People Are Poor Because of Their Own Bad Choices?*, GUARDIAN (July 5, 2017, 5:00 PM), <https://www.theguardian.com/us-news/2017/jul/05/inequality-poor-people-bad-choices-wealthy-bias>.

⁶⁷ Zachary Liscow & Abigail Pershing, *Why Is So Much Redistribution In-Kind and Not in Cash? Evidence from a Survey Experiment*, NAT’L TAX J. (forthcoming), <https://ssrn.com/abstract=3672415>.

⁶⁸ Piff et al., *supra* note 45, at 496–97.

⁶⁹ Dorfman, *Fear of the Disability Con*, *supra* note 24, at 1080.

⁷⁰ Samuel R. Bagenstos, *Disability Rights and the Discourse of Justice*, 73 SMU L. REV. F. 26, 32 (2020).

⁷¹ See Katie Eyer, *Claiming Disability*, 101 B.U. L. REV. 547, 559–64 (2021).

relationships between poverty and cognitive functions. To the extent that the legal, political, and moral distinctions between the broad categories of “poverty” and “disability” depend upon assumptions about fault and responsibility for being disadvantaged, understanding those causal relationships is a step towards determining whether the conceptual distinction between the categories is sound.⁷²

II. BRAIN AND BEHAVIORAL SCIENCE UNDERMINE ASSUMPTIONS ABOUT THE DISTINCTION BETWEEN POVERTY AND DISABILITY

Poverty is a complex socioeconomic condition and persistent social problem. It is now well established that poorer people experience, on average, shorter lifespans, higher rates of physical and mental illness, and lower academic achievement.⁷³ According to the most recent report from the U.S. Census Bureau, thirty-four million Americans lived below the federal poverty line in 2019.⁷⁴ The recent shocks of the 2008 financial crisis and the economic fallout of the COVID-19 pandemic have brought renewed attention to poverty from the popular media, as well as from policymakers and legislators. During this time, poverty has also been the subject of new theories and research, which this Part describes.

The research reviewed below is focused on novel brain and cognitive/behavioral science associated with poverty, lower socioeconomic status, and the subjective experience of poverty.⁷⁵ The brain and behavioral research reviewed raises, and begins to address, a fraught question regarding the causal relationships between poverty and cognitive problems: that is, are people poor because they are innately less capable in the labor market,⁷⁶ or

⁷² See Adam M. Samaha, *What Good Is the Social Model of Disability?*, 74 U. CHI. L. REV. 1251, 1279 (2007).

⁷³ Farah, *supra* note 1, at 428; see also Daniel A. Hackman, Martha J. Farah & Michael J. Meaney, *Socioeconomic Status and the Brain: Mechanistic Insights from Human and Animal Research*, 11 NATURE REV. NEUROSCIENCE 651, 651 (2010).

⁷⁴ JESSICA SEMEGA ET AL., U.S. CENSUS BUREAU, U.S. DEP’T OF COM., P60-270 (RV), INCOME AND POVERTY IN THE UNITED STATES: 2019 12 (rev. ed. 2021), <https://www.census.gov/content/dam/Census/library/publications/2020/demo/p60-270.pdf>.

⁷⁵ It is beyond the scope of this Article to attempt a meta-review of the vast sociological and epidemiological literatures on the social determinants of health, including the relationship between low income and other comorbidities of socioeconomic status (SES) such as violence, trauma, family status, nutrition, environmental toxins, systemic and structural racism, political economy, and educational system. But these determinants and brain-based mechanisms are not mutually exclusive; any effects of each act through the brain to affect behavior, because the brain produces all behavior. This Article focuses on internally-located mechanisms that are more proximate to behavior production, rather than specific environmental or epidemiological factors that undoubtedly influence the brain. Sebastián J. Lipina & M. Soledad Segretin, *Strengths and Weakness of Neuroscientific Investigations of Childhood Poverty: Future Directions*, 9 FRONTIERS HUM. NEUROSCIENCE 1, 1 (2015); Michael Marmot, *Social Determinants of Health Inequalities*, 365 LANCET 1099, 1099–1102 (2005).

⁷⁶ For suggestions of this causal relationship between poverty and cognitive problems, see Wax, *supra* note 18, at 256; Isabel V. Sawhill, *The Behavioral Aspects of Poverty*, 153 PUB. INT. 79, 85 (2003); Linda S. Gottfredson, *Why g Matters: The Complexity of Everyday Life*, 24 INTEL. 79, 116–20 (1997)

are they poor, at least in part, because being poor limits brain development and causes cognitive problems that impede work and life functioning?

This framing—inherent in the policy-focused interpretations of the scientific research—assumes a simplified agent-environment dynamic of an individual actor in a well-functioning labor market. In assuming this framework, the research incorporates neoliberal, capitalist assumptions⁷⁷ about the relationship between the individual and her economic status: meaning that, by working hard and being “smart,” one can avoid poverty, and that individual behavior is primarily responsible for one’s economic condition. This perspective leaves out the role that broader political and economic structures play in contributing to poverty and precarity through, for instance, facilitating wage suppression, structural racism, and discrimination.⁷⁸ It also ignores the fact that poverty can be alleviated by governmental action and redistribution, rather than by individual labor.⁷⁹

The claim in this Article is not that the brain/behavior scientific perspective is the best way to explain poverty, nor is it an endorsement of the market fundamentalist frame.⁸⁰ Rather, this Article takes the science on its own terms, including its assumptions and its limitations, and accepts that the current *policy* discourse is dominated by the market fundamentalist frame. My core claim—that the separate categories of poverty and disability are premised on scientifically inaccurate assumptions—serves as a both an internal critique of the way in which that framework presently categorizes poverty, as well as a challenge to some of the key factual assumptions about human behavior that undergird the framework itself. This Article reveals that the assumptions inherent in the dominant market fundamentalist approach, and the law and policy that flow from it, are inaccurate.

As with any nascent science—particularly about human behavior—the work reviewed below comes with caveats and limitations. First, a major challenge for brain and behavioral scientists studying “poverty” as an independent variable is its multi-faceted and relational nature, perhaps one reason that it has been largely ignored in neuroscience until relatively

(arguing that cognitive abilities can affect economic outcomes, as higher intelligence related to better jobs and higher incomes).

⁷⁷ See Jewel, *supra* note 3, at 643–54.

⁷⁸ ELISE GOULD & HILARY WETHING, U.S. POVERTY RATES HIGHER, SAFETY NET WEAKER THAN IN PEER COUNTRIES 1–2, 5–7 (2012), <https://files.epi.org/2012/ib339-us-poverty-higher-safety-net-weaker.pdf>; see generally Jedediah Britton-Purdy et al., *Building a Law-and-Political-Economy Framework: Beyond the Twentieth-Century Synthesis*, 129 YALE L.J. 1784, 1786–88 (2020).

⁷⁹ GOULD & WETHING, *supra* note 78, at 1, 5–7; see also Ben Casselman & Jeanna Smialek, *U.S. Poverty Fell Last Year as Government Aid Made Up for Lost Jobs*, N.Y. TIMES (Sept. 14, 2021), <https://www.nytimes.com/2021/09/14/business/economy/census-income-poverty-health-insurance.html> (noting that poverty rates declined in 2020 due to the government benefits distributed in response to the pandemic, despite declines in employment).

⁸⁰ This is also conceptualized as the “Twentieth-Century Synthesis,” for which contemporary legal discourse has “serv[ed] as a powerful authorizing terrain.” Britton-Purdy et al., *supra* note 78, at 1789–90.

recently.⁸¹ Poverty encompasses not only a possible set of objective economic states, such as assets, income, or income-to-needs ratio,⁸² but also encompasses social capital, social exclusion,⁸³ and subjective experience.⁸⁴ The literature reviewed does not agree on any single set of measures, thereby making any attempt at quantitative or qualitative meta-analysis inherently messy. Second, notwithstanding the strong intersectionality between poverty and race/ethnicity, very little can be said about such demographic-specific associations with brain or behavior measures, as few existing studies of brain/behavior of the kind reviewed here report effects based on racial or ethnic identity.⁸⁵ Third, the dependent variable of “cognitive functioning” should be understood as a very broad term, not representative of any unitary construct, such as “intelligence.” Rather, the literature explores more discrete cognitive functions, such as attention, impulse control, language processing, emotional regulation, learning, working memory, and executive functioning, to name a few. As detailed below, declines or weaknesses in one area may be offset by strengths in another, which is a reality consistent with the lived experience of persons with disabilities. Finally, to the extent that I make claims about causality between associated variables, these should be

⁸¹ Farah, *supra* note 1, at 429 fig.1d; Matthew A. Diemer et al., *Best Practices in Conceptualizing and Measuring Social Class in Psychological Research*, 13 ANALYSES SOC. ISSUES & PUB. POL’Y 77, 78 (2013).

⁸² See LIANA FOX, U.S. CENSUS BUREAU, U.S. DEP’T OF COM., P60-272, THE SUPPLEMENTAL POVERTY MEASURE: 2019 2 (2020), <https://www.census.gov/content/dam/Census/library/publications/2020/demo/p60-272.pdf>.

⁸³ Greg J. Duncan, Katherine Magnuson & Elizabeth Votruba-Drzal, *Moving Beyond Correlations in Assessing the Consequences of Poverty*, 68 ANN. REV. PSYCH. 10.1–.2 (2017).

⁸⁴ Anandi Mani et al., *Poverty Impedes Cognitive Function*, 341 SCI. 976, 976 (2013); Khadija Shams, *Developments in the Measurement of Subjective Well-Being and Poverty: An Economic Perspective*, 17 J. HAPPINESS STUDS. 2213, 2214 (2016); Diemer et al., *supra* note 81, at 103; MARTIN RAVALLION, THE ECONOMICS OF POVERTY: HISTORY, MEASUREMENT, AND POLICY 107 (2016).

⁸⁵ Steven O. Roberts et al., *Racial Inequality in Psychological Research: Trends of the Past and Recommendations for the Future*, 15 PERSPECTIVES ON PSYCH. SCI. 1295, 1297–98 (2020) (reporting that in a sample of more than 26,000 publications in cognitive, developmental, and social psychology from 1974–2018, only five percent of publications highlighted race). One recent paper considers whether SES-linked problems in executive function are related to the volume of certain frontal brain areas and whether race moderated the effects. The authors concluded that brain volume in a particular prefrontal brain area significantly mediated the association between SES and one test of executive function (measuring attention, sequencing, mental flexibility, visual search, and motor functioning) in whites, but not in African Americans (and significant SES/functional relationships in all subjects), perhaps because higher levels of income and education may be “protective” only in whites. Danielle Shaked et al., *Dorsolateral Prefrontal Cortex Volume as a Mediator Between Socioeconomic Status and Executive Function*, 32 NEUROPSYCH. 985, 991 (2018). For research finding no interaction between racial discrimination, poverty, and cognition, see Antione D. Taylor, *The Relation Between Discrimination and Cognitive Function: Moderating and Mediating Factors* (2019) (Ph.D. dissertation, University of Maryland, Baltimore County) (ProQuest). This is not to minimize the impact of policy implications on racial and ethnic minorities, who make up a disproportionate share of lower SES populations, nor is it an effort to elide the racist histories of psychology and cognitive assessments such as intelligence tests. Andrew S. Winston, *Scientific Racism and North American Psychology*, OXFORD RSCH. ENCYCS.: PSYCH. (May 29, 2020), <https://doi.org/10.1093/acrefore/9780190236557.013.516>.

understood as probabilistic—not deterministic—claims.⁸⁶ There are differences in how individuals and families experience poverty and even differences in how individuals within the same family unit experience poverty.

The present state of the science is complex and incomplete, but we know enough to draw some relatively firm conclusions. To date, the weight of the evidence suggests that poverty is a contributing cause of cognitive deficits in adults and differences in brain development in children. The existing work on humans is also informed by decades of animal research, which conclusively shows that environmental deprivation and related stress causes problems in brain development and limitations in cognitive function.⁸⁷ Nevertheless, definitive proof of the *degree* to which poverty is the cause of the cognitive problems manifest in poverty does not yet exist, nor are we able to identify the *specific* mechanisms through which poverty limits brain development and cognitive function. Moreover, the complete causal story is not a simple binary “either/or” of environment or heritable factors.⁸⁸ The best available theories explaining the behavioral data are interactionist.⁸⁹ Furthermore, while rigorous experimental data on the causal relationship between early childhood poverty and differences in brain development and cognitive function is anticipated to be published in the coming months and years,⁹⁰ given the complexity of socioeconomic status as a phenomenon of study, we should heed Martha Farah’s observation that “[t]his is not a topic for a single ‘critical experiment’ or a single definitive observational study,

⁸⁶ See Duncan, Magnuson & Votruba-Drzal, *supra* note 83, at 10.4 (“Poverty does not always affect all families, or even affect all families that experience negative outcomes from poverty, in the same way. Poverty is best understood as an insufficient, nonredundant part of a condition, which is itself unnecessary but is sufficient for the occurrence of the effect.”) (citation omitted).

⁸⁷ See, e.g., Sonia J. Lupien et al., *Effects of Stress Throughout the Lifespan on the Brain, Behaviour and Cognition*, 10 NATURE REV. NEUROSCI. 434, 435 (2009); Joan L. Luby, Tallie Z. Baram, Cynthia E. Rogers & Deanna M. Barch et al., *Neurodevelopmental Optimization After Early-Life Adversity: Cross-Species Studies to Elucidate Sensitive Periods and Brain Mechanisms to Inform Early Intervention*, 43 TRENDS NEUROSCI. 744, 744 (2020). See generally Mark R. Rosenzweig, *Effects of Environment on Brain and Behavior in Animals*, in PSYCHOPATHOLOGY AND CHILD DEVELOPMENT: RESEARCH AND TREATMENT 33 (Eric Schopler & Robert J. Reichler eds., 1976); Hackman, Farah & Meaney, *supra* note 73.

⁸⁸ Farah, *supra* note 1, at 431; see also James J. Heckman, *Skill Formation and the Economics of Investing in Disadvantaged Children*, 312 SCI. 1900, 1900–02 (2006).

⁸⁹ See, e.g., Jennifer Sheehy-Skeffington, *The Effects of Low Socioeconomic Status on Decision-Making Processes*, 33 CURRENT OP. PSYCH. 183, 185 (2020); Gillian V. Pepper & Daniel Nettle, *The Behavioural Constellation of Deprivation: Causes and Consequences*, 40 BEHAV. & BRAIN SCI. 314 (2017); Matuš Adamkovič & Marcel Martončík, *A Review of Consequences of Poverty on Economic Decision-Making: A Hypothesized Model of a Cognitive Mechanism*, 8 FRONTIERS PSYCH. 1, 2 (2017); Duncan, Magnuson & Votruba-Drzal, *supra* note 83, at 10.2; see also W.K. Bickel et al., *A Competing Neurobehavioral Decision Systems Model of SES-Related Health and Behavioral Disparities*, 68 PREVENTATIVE MED. 37, 37–38 (2014).

⁹⁰ Much of this current research is being conducted through the Baby’s First Years study. *About, BABY’S FIRST YEARS*, <https://www.babysfirstyears.com> (last visited Mar. 16, 2022). Kimberly G. Noble et al., *Baby’s First Years: Design of a Randomized Controlled Trial of Poverty Reduction in the United States*, 148 PEDIATRICS e2020049702 (2021) (describing the study design). The first publication of data from this study came out in January 2022. See *infra* text accompanying notes 132–138.

no matter how well designed.”⁹¹ The claim in this Part, however, is fully compatible with these important qualifications. We are close enough to a general theory of causality—that poverty causes some meaningful degree of problems in brain development and cognitive functioning—to assess the implications of this theory for law and policy.

By relying on this broad theory of causality, this Article adheres to Kathryn Zeiler’s recommendation that commentators on policy prescriptions apply *theories*, well-supported by a body of evidence, rather than data itself.⁹² This practice provides a more stable bridge between the descriptive-normative gap than the practice of directly applying results of a single or handful of studies, as it focuses on how well a theory is supported by the entire corpus of relevant data and on the questions that remain unsettled. In the case at hand, applying the theory that poverty causes problems in development and cognition embraces variability in both independent and dependent variables within the empirical literature and permits a broader view of the available data.

Where existing categorical constructions of “poverty” and “disability” lead to differential legal treatment of persons who are “merely” poor but not disabled, the distinction between these categories is based on normative judgments about deservingness that have some grounding in factual premises about the causes of certain behavior.⁹³ To the extent that brain and behavioral science of poverty undermines those factual premises because it demonstrates that poverty itself is a contributing cause of cognitive and behavioral mechanisms that perpetuate poverty, and may be analogous to other cognitive or mental disabilities, the normative judgments based upon those premises should be re-evaluated. To that end, the science reviewed below focuses on two domains: the effects of poverty on (1) children’s neurodevelopment and (2) the cognitive functioning of adults. In both sections, special attention is given to experiments that provide evidence for causal relationships.

A. *Childhood Brain and Cognitive Development*

The 2010 Census revealed that one in five children in the United States lives in poverty and more than two in five are poor or near-poor.⁹⁴ While the negative relationships between childhood poverty, health, and academic

⁹¹ Martha J. Farah, *The Neuroscience of Socioeconomic Status: Correlates, Causes, and Consequences*, 96 NEURON 56, 62 (2017).

⁹² Kathryn Zeiler, *Cautions on the Use of Economics Experiments in Law*, 166 J. INSTITUTIONAL & THEORETICAL ECON. 178, 179 (2010).

⁹³ See *supra* Part I.

⁹⁴ Sara B. Johnson, Jenna L. Riis & Kimberly G. Noble, *State of the Art Review: Poverty and the Developing Brain*, 137 PEDIATRICS 1, 1 (2016) (citing CARMEN DENAVAS-WALT & BERNADETTE D. PROCTOR, U.S. CENSUS BUREAU, U.S. DEP’T OF COM., P60-249, INCOME AND POVERTY IN THE UNITED STATES: 2013 14 (2014)). For the 2019 report and the updated statistic, see SEMEGA ET AL., *supra* note 74, at 15 fig.10, 16.

outcomes are well-documented,⁹⁵ the study of the relationship between childhood poverty and brain development only began in the early 2000s.⁹⁶ Over the past decade, it has quickly expanded, and several recent reviews have attempted to organize the current state of the field.⁹⁷ The key findings will be briefly recapitulated here and supplemented with recent longitudinal studies on brain development, as well as a description of an ongoing study that employs a randomized controlled trial design. The reason for this focus is two-fold. First, longitudinal observational studies of brain structure and function throughout childhood development offer baselines for hypotheses about causal relationships between SES and brain development, while randomized controlled trials can provide more definitive causal information. Work on brain structure and function identifies potential mechanisms mediating the relationships between environment and behavior and thus possible avenues for intervention.⁹⁸ Second, by focusing on the brain structure and function of children raised in low SES environments, this Article ties poverty to the physical and biological conceptions of “impairment” that permeate the political and legal category of disability.⁹⁹ That is, it may be easier for law and policy audiences to conceptualize poverty as disabling if it is understood that poverty has physical consequences in the brain.

Poor children are at far greater risk for poor mental health, academic, and behavioral outcomes—all functions of the brain. Cognitive neuroscience and structural brain imaging consistently indicate that low childhood SES, and many of its attendant conditions (e.g., trauma, environmental toxins, nutrition, family stress) are negatively associated with brain development and cognition.¹⁰⁰ Early work in the field of neuroscience and brain development used cognitive neuroscience techniques to examine how socioeconomic

⁹⁵ See generally, e.g., Allen W. Gottfried et al., *Socioeconomic Status in Children's Development and Family Environment: Infancy Through Adolescence*, in *SOCIOECONOMIC STATUS, PARENTING, AND CHILD DEVELOPMENT* 189 (Marc H. Bornstein & Robert H. Bradley eds., 2003); Greg J. Duncan et al., *How Much Does Childhood Poverty Affect the Life Chances of Children?*, 63 *AM. SOCIO. REV.* 406 (1998); Gary W. Evans, *Child Development and the Physical Environment*, 57 *ANN. REV. PSYCH.* 423 (2006).

⁹⁶ Farah, *supra* note 1, at 429 fig. 1d.

⁹⁷ See generally Johnson, Riis & Noble, *supra* note 94, at 1–2; Farah, *supra* note 91, at 66–67; Lipina & Segretin, *supra* note 75, at 1–2; Duncan, Magnuson & Votruba-Drzal, *supra* note 83, at 10.1; Natalie H. Brito & Kimberly G. Noble, *Socioeconomic Status and Structural Brain Development*, 8 *FRONTIERS NEUROSCI.* 1, 1 (2014). For a comprehensive review of work done through 2009, see Daniel A. Hackman & Martha J. Farah, *Socioeconomic Status and the Developing Brain*, 13 *TRENDS COGNITIVE SCI.* 65 (2009).

⁹⁸ Observational data collected by tracking children growing up in different conditions cannot definitively prove causation, but it can “constrain the causal possibilities by determining whether SES-linked brain differences predict the relevant outcomes and, using statistical mediation analysis, whether that relation accounts for some or all of the SES-outcome relation.” Farah, *supra* note 91, at 63–64.

⁹⁹ See Ryan, *supra* note 2, at 1487, 1493.

¹⁰⁰ See Duncan, Magnuson & Votruba-Drzal, *supra* note 83, at 414.

status relates to brain development.¹⁰¹ Behavioral tests were used to parse brain function into relatively independent cognitive and neural systems, either by analogizing a subject's performance on a specific task to the performance of people with specific brain lesions or by inferring neural correlates from neuroimaging that identified associations between particular brain activation patterns and specific cognitive functions. Work in this vein found deficits in children of lower socioeconomic status relating to language function and executive function (including working memory, cognitive control, and reward processing), but not to memory and spatial or visual cognition.¹⁰² Separate work, which measured brain activity via electrodes placed on the scalp, indicated differences in the specific neural systems recruited during cognitive processing, even where task performance did not differ between persons of lower and higher socioeconomic status.¹⁰³ By identifying different processing mechanisms used to execute behaviors that are similar upon observation, these early findings demonstrate how brain science adds information to behavioral studies. They also signal that closer attention should be paid to how proposed interventions might actually work for lower and higher SES children.¹⁰⁴

As of 2009, only a handful of brain imaging studies existed, but these studies indicated that socioeconomic status influences brain function,¹⁰⁵ and suggested that differences in socioeconomic status were associated with anatomical differences in the brain.¹⁰⁶ Since 2009, brain imaging work in children of low socioeconomic status has focused mostly on structural imaging—static pictures assessing brain shape, size, and connections.¹⁰⁷ Major advances have come from massive datasets examining hundreds of subjects, including the same subjects over extended periods of time. For example, two such longitudinal studies used data from the multi-site, multi-year National Institutes of Health (NIH) Magnetic Resonance Imaging

¹⁰¹ Much of this work has been reviewed at length for a law review audience. See Ryan, *supra* note 2, at 1456–78; see also Hackman & Farah, *supra* note 97, at 65.

¹⁰² See Ryan, *supra* note 2, at 1484 (summarizing that Farah's studies revealed that SES "correlated with some cognitive functions but not others"); see also Mark M. Kishiyama et al., *Socioeconomic Disparities Affect Prefrontal Function in Children*, 21 J. COGNITIVE NEUROSCI. 1106, 1106, 1113 (2009).

¹⁰³ See Ryan, *supra* note 2, at 1483–85 (summarizing Farah's findings, their limitations, and their importance); see also Kishiyama et al., *supra* note 102, at 1113–14 (summarizing studies).

¹⁰⁴ Farah, *supra* note 1, at 435–36.

¹⁰⁵ See generally, e.g., Kimberly G. Noble et al., *Brain-Behavior Relationships in Reading Acquisition Are Modulated by Socioeconomic Factors*, 9 DEV. SCI. 642 (2006); Rajeev D.S. Raizada et al., *Socioeconomic Status Predicts Hemispheric Specialisation of the Left Inferior Frontal Gyrus in Young Children*, 40 NEUROIMAGE 1392 (2008).

¹⁰⁶ See Raizada et al., *supra* note 105, at 1397–99; Hengyi Rao et al., *Early Parental Care Is Important for Hippocampal Maturation: Evidence from Brain Morphology in Humans*, 49 NEUROIMAGE 1144, 1148–49 (2010).

¹⁰⁷ See Brito & Noble, *supra* note 97, at 1–2.

(MRI) Study of Normal Brain Development.¹⁰⁸ The first study, published in 2013, examined brain development by using repeated MRI scans in an economically diverse cohort of healthy children from ages five months to four years.¹⁰⁹ Compared to children from wealthier households, children from homes with incomes below two hundred percent of the federal poverty line had significantly lower gray matter volume overall—“gray matter” referring to neuronal cells that process information—and, specifically, they had lower gray matter volume in the frontal and parietal areas of the brain, which are critical for mediating executive and language functions.¹¹⁰ Notably, while no differences were found between children of moderate and high socioeconomic households, “[t]he association between family economic status and average brain volumes was found to be concentrated among the most impoverished children.”¹¹¹ These differences persisted and, in fact, widened over growth trajectories.¹¹² Having controlled for a variety of potential factors, including birth weight, early health, and infant head size at birth, the authors conclude that “[i]nfants, toddlers and preschoolers from lower income families began their lives with similar gray matter volumes but had lower total gray matter compared with those from middle and high-income households by toddlerhood.”¹¹³

A second study found that the trend continues as children grow older. Using the same NIH data set, this study looked at a cohort of children and adolescents ranging from ages four to twenty-two.¹¹⁴ Researchers confirmed the earlier findings that children from lower income households displayed atypical gray matter development, particularly in the frontal lobe, temporal lobe, and hippocampus.¹¹⁵ As with the infant/toddler study, “the detrimental

¹⁰⁸ See generally Deborah P. Waber et al., *The NIH MRI Study of Normal Brain Development: Performance of a Population Based Sample of Healthy Children Aged 6 to 18 Years on a Neuropsychological Battery*, 13 J. INT’L NEUROPSYCH. SOC’Y 729 (2007).

Important to note are the rigid exclusion factors that eliminated from the study group individuals who were adopted or who had a history of problematic pregnancy, traumatic birth, neonatal complications, maternal medications during breastfeeding, premature birth or low birth weight, restricted childhood growth, serious illnesses, lead poisoning, neurological illness or abnormalities, psychiatric illness in child or first-degree relatives, and low intelligence. See *id.*; see also Jamie L. Hanson et al., *Family Poverty Affects the Rate of Human Infant Brain Growth*, 8 PLOS ONE 1, 3 (2013). As the authors of a key study write: “This makes our estimates of group differences conservative and likely underestimates the effects of poverty on children’s brain development,” due to high comorbidity of the exclusionary factors and low socioeconomic status. Hanson et al., *supra*, at 5.

¹⁰⁹ Hanson et al., *supra* note 108, at 1.

¹¹⁰ *Id.* at 5.

¹¹¹ *Id.* In structural imaging, gray matter is contrasted with white matter, which is the myelinated (i.e., insulated) axons (i.e., connecting parts) that form long-distance links from one area of the brain to the other.

¹¹² *Id.* at 6–7, 6 fig.2, 6 fig.3, 7 fig.4.

¹¹³ *Id.* at 5.

¹¹⁴ Nicole L. Hair et al., *Association of Child Poverty, Brain Development, and Academic Achievement*, 169 JAMA PEDIATRICS 822, 822 (2015).

¹¹⁵ *Id.* at 825.

influence of growing up in or near poverty was concentrated among those children from the poorest households,” a finding that was robust across alternative measures of socioeconomic status.¹¹⁶ This study also employed a statistical technique called “mediation analysis,” which assesses the extent to which a mediating variable transmits the effect of one variable (in this case, brain structure) to another variable (in this case, academic achievement).¹¹⁷ It found that developmental differences in gray matter in the frontal and temporal lobes may explain as much as fifteen to twenty percent of low income children’s achievement deficits.¹¹⁸ Because this study, like its predecessor, excluded children with background confounding factors, the sample of children it sampled “were likely doing better than most children living in poverty,” and therefore the “analyses likely understated the full effects of poverty on children’s development.”¹¹⁹

These results are convergent with the largest cross-sectional structural neuroimaging study published by a different research group. A cohort comprising over one thousand “typically developing” children, aged three to twenty, underwent MRI brain scans as part of the multi-site Pediatric Imaging, Neurocognition and Genetics study.¹²⁰ To control for morphological differences among different ancestry groups, the study also collected a saliva sample to determine proportions of ancestral descent for each of the six major continental populations.¹²¹ The dataset revealed specific associations between brain structures and distinct socioeconomic factors, including parental education and income.¹²² Specifically, parental education was linearly associated with brain surface area, independent of age, sex, or genetic ancestry.¹²³ Family income was logarithmically associated with brain surface area, suggesting that, “for every dollar in increased income, the increase in children’s brain surface area was proportionally greater at the lower end of the family income spectrum.”¹²⁴ Parental education was also significantly associated with left hippocampal volume, with the association “steepest at lower levels of parent education.”¹²⁵ This study also used mediation analysis to assess the extent to which differences in brain surface area accounted for

¹¹⁶ *Id.*

¹¹⁷ *Id.* at 827; see also David P. MacKinnon, Amanda J. Fairchild & Matthew S. Fritz, *Mediation Analysis*, 58 ANN. REV. PSYCH. 593 (2007).

¹¹⁸ Hair et al., *supra* note 114, at 827.

¹¹⁹ *Id.* at 828.

¹²⁰ Kimberly G. Noble et al., *Family Income, Parental Education and Brain Structure in Children and Adolescents*, 18 NATURE NEUROSCIENCE 773, 773 (2015); see *Research: Pediatric Imaging, Neurocognition, and Genetics (PING) Study*, U.C. SAN DIEGO: CTR. FOR HUM. DEV., <https://chd.ucsd.edu/research/ping.html> (last visited Mar. 16, 2022).

¹²¹ Noble et al., *supra* note 120, at 778 (directing the reader to supplementary information on methods).

¹²² *Id.* at 773–76.

¹²³ *Id.* at 776–77.

¹²⁴ *Id.* at 777.

¹²⁵ *Id.* at 775–76.

links between income and cognitive performance on tests of cognitive control, working memory, and language.¹²⁶ It found that brain surface area partially accounted for links between income and cognitive control or working memory, but not between income and language tasks.¹²⁷ Finally, a recent review synthesized research on SES-related environmental influences on the rate of brain development, which is dynamically related to SES in different age periods.¹²⁸ In reconciling complex findings, the authors theorize that “experiences associated with childhood SES affect not only the outcome but also the pace of brain development, with potential influences on brain plasticity throughout life.”¹²⁹

These studies, while suggestive, only demonstrate correlations between poverty and cognitive development, and they make no claims about causation. Moreover, the dependent measures of brain matter are not a simple matter of “more brain is better.” The developmental structural imaging field is still assessing appropriate morphometric measurements of brain development (such as individual or composite measurements of volume, thickness, and surface area) and investigating how these factors relate to cognition and behavior.¹³⁰ Much more work remains to be done to determine precise causal mechanisms through which poverty and socioeconomic status affect brain development, as well as to determine the implications of that brain development on cognitive and behavioral functions.¹³¹ Randomized controlled trials (RCT) are the best experimental design for identifying causal relationships, but such experiments are logistically difficult, expensive, and, of course, limited by ethical constraints (for example, since it would be unethical to reduce a family’s socioeconomic status for the purpose of an experiment, controlled trials are limited to the assessment of interventions designed to raise living standards).

Despite these obstacles, at least one major RCT is currently underway. The Baby’s First Years Study is the “first study in the United States to assess the impact of poverty reduction on family life and infant and toddlers’ cognitive, emotional, and brain development.”¹³² Across four different

¹²⁶ *Id.* at 776–77.

¹²⁷ *Id.*

¹²⁸ Ursula A. Tooley, Danielle S. Bassett & Allyson P. Mackey, *Environmental Influences on the Pace of Brain Development*, 22 *NATURE REV. NEUROSCI.* 372–75 (2021) (synthesizing research on cortical thickness in different age brackets, which is non-linear and related to the overall pace of brain development).

¹²⁹ *Id.* at 379.

¹³⁰ See Brito & Noble, *supra* note 97, at 9–10.

¹³¹ Duncan, Magnuson & Votruba-Drzal, *supra* note 83, at 416 (emphasizing that downstream effects of income or SES on “family processes” may be the “key causal agents” affecting children’s outcomes—perhaps because income buys more nutritious food or alleviates a parent’s psychological distress—but that it is not money itself (such as cash sitting in a closet) that affects the child’s environment).

¹³² See *BABY’S FIRST YEARS*, <https://www.babysfirstyears.com> (last visited Mar. 16, 2022).

cities, over one thousand low-income mothers (with average household incomes just over \$20,000 per year) were recruited upon their child's birth to receive an unconditional monthly cash gift of either \$333 or \$20 for the first fifty-two months of their child's life, with quantitative data (including brain activity measurement) collected at first, second, and third birthdays.¹³³ A random sample subset at two of the sites also periodically collect qualitative data, starting between eight and twelve months of the baby's life.¹³⁴ The study began in May 2018, though in-home data collection was interrupted in March 2020 by the COVID-19 pandemic, and the study's data and interpretation will also likely be impacted by the expanded child tax credit that went into effect in July 2021.¹³⁵

The first set of data from the Baby's First Years Study was published in January 2022.¹³⁶ At approximately one year of age, infants in the high-cash gift group showed different patterns of electrical brain activity, as measured by electroencephalography, than infants in the low-cash gift group.¹³⁷ The authors report that the "intervention designed to reduce poverty appeared to cause changes in children's brain functioning in ways that have been linked to

¹³³ *Id.*

¹³⁴ *About: Data Collection*, BABY'S FIRST YEARS, <https://www.babysfirstyears.com/data-collection-1> (last visited Mar. 16, 2022).

¹³⁵ *About: Data and Documentation*, BABY'S FIRST YEARS, <https://www.babysfirstyears.com/data-and-documentation> (last visited Mar. 16, 2022). See Jeff Stein, *Child Cash Benefit Will Begin Hitting Millions of Parents' Bank Accounts July 15*, WASH. POST (May 17, 2021, 1:56 PM), <https://www.washingtonpost.com/us-policy/2021/05/17/biden-child-tax-benefit> (noting the economic impact of the pandemic and the anticipated cash benefits (not tied to parents' employment), which are estimated to flow to nearly ninety percent of American families starting in July 2021 as part of the March 2021 American Rescue Plan). In theory, this benefit—nearly the same size as that given to the study group in Baby's First Years (BFY)—should flow to all study participants, but it is anticipated that a small portion of eligible families will have a harder time accessing the payments because they did not file tax returns in 2020. The core research team wrote:

Because we have a random assignment study, and the pandemic-related federal policy responses are happening to all study participants, the random assignment nature of the study is retained, allowing us to continue to estimate impacts of the unconditional cash gifts from BFY on child and family outcomes. Nevertheless, the BFY research team has worked to track a variety of contextual factors shaping the lives of the families in the study. This includes, among others, the economic downturn following the onset of the COVID-19 pandemic, as well as the government responses to the pandemic, including rounds of stimulus checks in 2020 and 2021, and the monthly Child Tax Credit payments that are planned for July-December 2021. Because not all eligible individuals received stimulus checks or will receive the periodic Child Tax Credits, we will collect data on mothers' receipt of such income, which we can include measures of in future analyses.

Email from Baby's First Years Researchers (June 8, 2021) (on file with author).

¹³⁶ Sonya V. Troller-Renfree et al., *The Impact of a Poverty Reduction Intervention on Infant Brain Activity*, 119 PROC. NAT'L ACAD. SCIS., Jan. 25, 2022, at 1, 1 <https://www.pnas.org/doi/pdf/10.1073/pnas.2115649119>.

¹³⁷ *Id.* at 2–5.

subsequent higher cognitive skills.”¹³⁸ The children are still too young for behavioral and functional differences in language, cognition, or educational attainment to be measured, so, in many ways, these results are preliminary. But the important implication from the study is that the differences in brain activity were likely caused by the different levels of cash gifts—an inference possible because of the randomized control design of the study. Future work from this study will shed even more light on the strength of the causal relationship between family income, childhood experiences, and brain development.

Even given our incomplete state of knowledge, what is remarkable about currently published studies is the general convergence in the pattern of results. In both longitudinal and cross-sectional observational studies, brain structure has been found to be significantly impacted by childhood socioeconomic status.

B. *Decision-Making by Adults in Poverty*

The science on children’s development in poverty helps build a causal theory of the long-term effects of poverty on cognition and behavior. But what do we know about the influence of poverty on adult thinking, decision-making, and behavior? Specifically, to what extent is low socioeconomic status associated with behaviors that perpetuate poverty, and what is the nature of the causal relationship between poverty and such behaviors?¹³⁹ In addressing these questions, behavioral researchers are, in part, attempting to test the stereotype, common in the media and political discourse, that persons who are poor are at fault for their “bad” economic decisions that keep them in poverty.

Among the set of financial behaviors that reinforce poverty are decisions related to financial management, such as underuse of formal banking institutions and disproportionate reliance on high interest check-cashing and payday loan services.¹⁴⁰ Other financial behaviors exhibited by the poor include playing lotteries,¹⁴¹ saving too little,¹⁴² and borrowing at high interest

¹³⁸ *Id.* at 5.

¹³⁹ Johannes Haushofer & Ernst Fehr, *On the Psychology of Poverty*, 344 *SCI.* 862, 862–64 (2014).

¹⁴⁰ Marianne Bertrand, Sendhil Mullainathan & Eldar Shafir, *Behavioral Economics and Marketing in Aid of Decision Making Among the Poor*, 25 *J. PUB. POL’Y & MKTG.* 8, 11–12 (2006); Will Dobbie & Paige Marta Skiba, *Information Asymmetries in Consumer Credit Markets: Evidence from Payday Lending*, 5 *AM. ECON. J.* 256, 258–59 (2013).

¹⁴¹ Jens Beckert & Mark Lutter, *Why the Poor Play the Lottery: Sociological Approaches to Explaining Class-Based Lottery Play*, 47 *SOCIO.* 1152, 1153 (2013); Emily Haisley, Romel Mostafa & George Loewenstein, *Subjective Relative Income and Lottery Ticket Purchases*, 21 *J. BEHAV. DECISION MAKING* 283, 284 (2008).

¹⁴² See Pascaline Dupas & Jonathan Robinson, *Why Don’t the Poor Save More? Evidence from Health Savings Experiments*, 103 *AM. ECON. REV.* 1138, 1168 (2013) (“In both developed and developing countries, many people have difficulty saving as much as they would like.”); D. SEAN SHURTLEFF, NAT’L CTR. FOR POL’Y ANALYSIS, BRIEF ANALYSIS NO. 672, IMPROVING SAVINGS INCENTIVES FOR THE POOR 1 (2009) (“Low-income workers . . . have a low rate of saving of any kind.”).

rates.¹⁴³ Health-related behaviors include consumption of alcohol, tobacco products, and fast food.¹⁴⁴ There is a longstanding debate in the social sciences about the reasons for such differences. The first explanation—the “social causation” theory—characterizes the behavior of persons who are poor as predominantly shaped by their circumstances; that is, the poor live in environments that promote “bad” (defined here as long-term health- and self-harming) behaviors by virtue of the limited available choice set: liquidity constraints, lack of access to credit, food deserts, etc.¹⁴⁵ The second explanation—the “social selection” theory—focuses on traits inherent either to poor people themselves (and the heritability of those traits)¹⁴⁶ or values inherent to a “culture of poverty,” such as “psychological and attitudinal short-fallings.”¹⁴⁷

It is improbable that either social causation or social selection, taken alone, provides a compelling causal explanation of complex social outcomes like poverty. Determining the strength of the causal nature of the relationship between economic circumstances and decision-making is rife with empirical challenges. Random assignment of subjects to different socioeconomic conditions, necessary to assess causality, is often impractical. However, some “natural experiments,” along with experiments that attempt to manipulate some aspects of poverty and its subjective experience, provide

¹⁴³ Anuj K. Shah, Sendhil Mullainathan & Eldar Shafir, *Some Consequences of Having Too Little*, 338 SCI. 682, 683 (2012).

¹⁴⁴ See Fred C. Pampel, Patrick M. Krueger & Justin T. Denney, *Socioeconomic Disparities in Health Behaviors*, 36 ANN. REV. SOCIO. 349, 350–51 (2010) (explaining that health behaviors, including tobacco use and poor diet, “account for, on average, roughly one-quarter of SES disparities in health”).

¹⁴⁵ Shah, Mullainathan & Shafir, *supra* note 143, at 682, 684; Leandro S. Carvalho, Stephan Meier & Stephanie W. Wang, *Poverty and Economic Decision-Making: Evidence from Changes in Financial Resources at Payday*, 106 AM. ECON. REV. 260, 260, 281 (2016); Haushofer & Fehr, *supra* note 139, at 863 (citing Carvalho, Meier & Wang, *supra*); Esther Duflo, *Poor But Rational?*, in UNDERSTANDING POVERTY 367, 367–68 (Abhijit Vinayak Banerjee, Roland Bénabou & Dilip Mookherjee eds., 2006).

¹⁴⁶ RICHARD J. HERRNSTEIN & CHARLES MURRAY, *THE BELL CURVE: INTELLIGENCE AND CLASS STRUCTURE IN AMERICAN LIFE* 109 (1994); see also Carvalho, Meier & Wang, *supra* note 145, at 260–61 (“Among economists, this debate [on class-based behavioral differences] has been manifest in lingering questions of whether the poor are more impatient, more risk averse, and have lower self-control . . .”); Shah, Mullainathan & Shafir, *supra* note 143, at 682 (explaining that one view of why low-income people engage in behaviors that reinforce poverty “focuses on personality traits of the poor”).

¹⁴⁷ Sociologist Oscar Lewis argued that the “culture of poverty” is a set of values that is adaptive to poverty, but ultimately limiting. OSCAR LEWIS, *FIVE FAMILIES: MEXICAN CASE STUDIES IN THE CULTURE OF POVERTY* 2 (1959); see also Bertrand, Mullainathan & Shafir, *supra* note 140, at 8. Though beyond the scope of this Article, the U.S. political roots of the “culture of poverty” are found in the infamous 1965 report by Daniel Patrick Moynihan. OFF. OF POL’Y PLAN. & RSCH., U.S. DEP’T OF LAB., *THE NEGRO FAMILY: THE CASE FOR NATIONAL ACTION* (1965). More recently, a Congressional Briefing and special issue of the American Academy of Political & Social Science have revived the study of “culture” as a determinant of poverty as an “empirical, not a political, question.” Mario Luis Small, David J. Harding & Michèle Lamont, *Reconsidering Culture and Poverty*, 629 ANNALS AM. ACAD. POL. & SOC. SCI. 6, 13 (2010); see also *Reconsidering Culture and Poverty: A Congressional Briefing*, AM. ACAD. POL. & SOC. SCI. (June 18, 2010), <https://www.aapss.org/news/reconsidering-culture-and-poverty-a-congressional-briefing/>; Sawhill, *supra* note 76, at 79, 83–84.

the best available data from which to draw causal inferences. Moreover, while simply observing real-world behavior patterns—with all their noise and complexity—may give little insight into the psychological mechanisms that may distinguish poor people’s decision-making from rich people’s, one promising approach is to deliberately study the behavioral *mechanisms* at work, usually by parsing complex behaviors into components of cognition familiar to behavioral researchers. This approach permits researchers to construct more nuanced, and ultimately more explanatory, sets of data from which to build theories,¹⁴⁸ and it allows the investigation of behavioral capacities to occur in relative isolation from normative judgments about behaviors being virtuous or bad.¹⁴⁹

The literature in this area is large and complex, and a full review would turn this Article into a book.¹⁵⁰ Decision-making in poverty—most consistently characterized by selective attention to one’s immediate surroundings, reduced inhibitory control, and preference for near-term rewards over long-term goals—has both internal and external causal factors. While the models that researchers put forth (described in more detail in the next section) vary in some respects, the common theme is that the “psychology of poverty” involves interaction between behavior and environment, with significant causal weight attributable to the contextual factors of low socioeconomic status.¹⁵¹

This interactionist framework echoes the starting point for the dominant theory of behavior in poverty in the field of behavioral economics: the option set available to a person in poverty affects behavior such that even the same perfectly rational decision-maker “would behave differently if he were poor than if he were rich.”¹⁵² It is also generally consistent with the empirical evidence supporting “scarcity theory”¹⁵³ and theories that the behavior of

¹⁴⁸ This approach allows for control of many features of the subjects’ environments, such that conclusions can be drawn about internal psychological mechanisms, even if some ecological validity is sacrificed in the context of a laboratory experiment.

¹⁴⁹ See JENNIFER SHEEHY-SKEFFINGTON & JESSICA REA, JOSEPH ROWNTREE FOUND., HOW POVERTY AFFECTS PEOPLE’S DECISION-MAKING PROCESSES 10 (2017) (“[W]hat appears self-destructive or unreasonable in a decision-making pattern associated with poverty is, in fact, performing an important proximal function—one that is hard to see from the perspective of social science observers writing from well beyond the world of poverty.”).

¹⁵⁰ A recent systematic review of research into the link between SES and thinking, decision-making, cognition, and behavior between 2010 and 2016 (in OECD countries) argues that the framing that best accounts for the range of behaviors observed in empirical studies establishes “decision-making in poverty as the product of the interaction of individual resources and powerful socioeconomic and cultural contexts.” *Id.* at 3; see also Pepper & Nettle, *supra* note 89, at 1; Adamkovič & Martončík, *supra* note 89, at 1; Haushofer & Fehr, *supra* note 139, at 862–64; Sheehy-Skeffington, *supra* note 89, at 183.

¹⁵¹ Sheehy-Skeffington & Rea, *supra* note 149, at 3; see also Sheehy-Skeffington, *supra* note 89, at 183.

¹⁵² Duflo, *supra* note 145, at 367.

¹⁵³ See generally SENDHIL MULLAINATHAN & ELДАР SHAFIR, SCARCITY: WHY HAVING TOO LITTLE MEANS SO MUCH 14–15 (2013) (arguing that “[s]carcity captures our attention and this provides a narrow benefit: we do a better job of managing pressing needs. But more broadly, it costs us: we neglect other concerns, and we become less effective in the rest of life”); Ernst-Jan de Bruijn & Gerrit

poor persons is adaptive to their context.¹⁵⁴ This framework is congruent with a conceptual legal theory of poverty as disabling, as will be discussed in Part III.

Since the purpose of this Article is to question assumptions about causality and behavior that underpin the fault-based categorization of poverty and disability, the research covered below will focus on the types of studies that provide the best available data for assessing causality: natural experiments (and quasi-experiments) and laboratory experiments that manipulate some aspect of the experience of financial scarcity in order to assess cognitive functions, including but not limited to economic decision-making.

It is important to recognize there are contexts in which financial adversity may create “better” cognitive capacities, such as procedural learning, certain executive functions in uncertain environments, and aspects of rational decision-making.¹⁵⁵ This underscores an important takeaway: there is not an across-the-board “decrease” or “decline” in cognitive capacities in poverty. Rather, poverty gives rise to differences, and, since behavior occurs in a range of contexts, sometimes those differences will prove advantageous rather than disadvantageous. This supports the idea, discussed below, that poverty should be understood as *disabling* rather than broadly incapacitating.

1. *Attentional Control, Behavioral Control, and Executive Function in Poverty*

When a person is preoccupied with one set of worries or pressures, they often neglect to pay attention to other areas of their life. While this generally happens to everyone in some contexts, including materially well-off people pressured for time or opportunities,¹⁵⁶ evidence is mounting that scarcity has

Antonides, *Poverty and Economic Decision Making: A Review of Scarcity Theory*, 92 *THEORY & DECISION* 5, 6–7 (2022).

¹⁵⁴ Junhua Dang, Shanshan Xiao & Siegfried Dewitte, *Commentary: “Poverty Impedes Cognitive Function” and “The Poor’s Poor Mental Power”*, 6 *FRONTIERS PSYCH.* 1, 2 (2015); Pepper & Nettle, *supra* note 89, at 37.

¹⁵⁵ See *infra* Part II.B.3.

¹⁵⁶ See Shah, Mullainathan & Shafir, *supra* note 143, at 682. The authors examined the behaviors of “poor” and “rich” people playing games, with “scarcity” between the groups as manipulated by the experimenters providing “budgets” via “paychecks” of fixed numbers of turns or amounts of time available to play a game in a given round. *Id.* at 683–84. Subjects endowed with “poor” budgets were more engaged in the games than those assigned to “rich” budgets, but they performed worse on and were more cognitively depleted by the games, as measured by a separate task assessing attentional function and cognitive control. *Id.* The experiment offering the most direct support for the theory that scarcity creates attentional neglect offered a preview, during a particular question, of the next question in a game. *Id.* There, time-poor participants performed similarly with and without previews, at a level leaving substantial room for improvement. Conversely, time-rich participants benefitted from the previews and performed even better. *Id.* Taken together, these studies provide the basis for the theory that scarcity’s primary effect on cognition is through an attentional mechanism: “[S]carcity elicits greater engagement and that a focus on some problems leads to neglect of others (manifesting in behaviors such as overborrowing). . . . We suggest that cognitive load arises because people are more engaged with problems where scarcity is salient.” *Id.* at 684. One of these experiments assessing “cognitive fatigue” did not replicate in a later study. See Colin F.

certain effects on attentional focus and, consequently, on cognition and behavior. Things that are immediately scarce capture the limited attention of a decision-maker, with the consequence that they neglect other, less urgent problems: today's grocery cart obscures consideration of next month's utility payment. For poor people, this is a constant, high-stakes problem impacting essential aspects of daily life.¹⁵⁷

Scarcity theory posits that it is the state of scarcity itself that impacts "cognitive bandwidth" or "cognitive load," burdens the cognitive system of an individual, and diminishes the quality of decision-making.¹⁵⁸ Different models of cognitive load theorize different mechanisms by which cognitive load may impact decision-making: limited self-control (e.g., ego-depletion, limited willpower), limited cognition (e.g., depletion of cognitive resources in the face of difficult trade-offs, thus reducing inhibition and attention direction), and limited attention (e.g., scarcity and stress as diverters/captors of attention).¹⁵⁹ The mechanisms theorized in the models are not, of course, mutually exclusive. Their taxonomy is more a product of evolving understanding than it is of any underlying truth of the matter.

The first stage of experimental work in adults theorized that the burdensome nature of decision-making under scarcity depleted behavioral control.¹⁶⁰ In a 2011 experiment, subjects randomly assigned to "poor" or "rich" conditions were asked to make "purchasing" decisions within their budgetary constraints.¹⁶¹ Decision-making in the poor condition resulted in impaired

Camerer et al., *Evaluating the Replicability of Social Science Experiments in Nature and Science Between 2010 and 2015*, 2 NATURE HUM. BEHAV. 637, 637–44 (2018). Indeed, this result also did not replicate when the original authors repeated the work with a much larger sample size. See generally Anuj K. Shah, Sendhil Mullainathan & Eldar Shafir, *An Exercise in Self-Replication: Replicating Shah, Mullainathan, and Shafir (2012)*, 75 J. ECON. PSYCH. 102127 (2019). This seems consistent with the failure of once-classic experiments in "willpower fatigue" to replicate. But the other key results supporting the conclusion that scarcity leads to over-borrowing (including over-borrowing of time as a resource) and greater focus, did replicate, though with smaller effect sizes. See *infra* notes 162–163 and accompanying text.

¹⁵⁷ Affluent people can experience "time poverty," which is linked to lower well-being and productivity. See generally Laura M. Giurge, Ashley V. Whillans & Colin West, *Why Time Poverty Matters for Individuals, Organisations and Nations*, 4 NATURE HUM. BEHAV. 993 (2020). Effects of immediate scarcity on attentional bandwidth and capacity are also present across background SES. See *infra* text accompanying notes 166–172. While this suggests that, to some extent, a subjective struggle against scarcity is a universal experience, the impact of this struggle varies greatly depending on the context of the person. For an affluent person pressed for time, filling out a form incorrectly, missing an appointment, or forgetting to pay a bill on time may amount to an inconvenience, but for a poor person it can mean the difference between having or not having food, shelter, healthcare, and other fundamental needs.

¹⁵⁸ MULLAINATHAN & SHAFIR, *supra* note 153.

¹⁵⁹ Dean Spears, *Economic Decision-Making in Poverty Depletes Behavioral Control*, 11 B.E. J. ECON. ANALYSIS & POL'Y 1, 4 fig.1 (2011).

¹⁶⁰ *Id.* Spears adopts the term "behavioral control" "to include what psychologists and others write about as 'willpower,' 'patience,' 'self-control,' 'self-regulation,' or 'executive' control or function: the pursuit of intentional behavioral goals, potentially despite automatic alternative behaviors or impulses." *Id.* at 3.

¹⁶¹ *Id.* at 2.

“behavioral control,” purportedly measured by poor performance on the Stroop task—a well-validated psychological task of inhibitory control¹⁶²—and by how long subjects could squeeze a handgrip.¹⁶³ Drawing from the theory that self-control (or willpower, or ego) is a limited, depletable resource, the study concluded that the difficulty of decision-making under scarcity depletes reserves of cognitive and behavioral control.¹⁶⁴ One problem for this interpretation is that the classic studies of the “limited resource” model of self-control have failed to replicate, and meta-analyses have concluded that the strength of the model has been overestimated.¹⁶⁵

Findings that link decision-making under scarcity to “attentional neglect” have proven more robust. Instead of being like a muscle that gets tired and must rest, limits on attention can be thought of more like a spotlight that is capable of focusing only on one area at a time.¹⁶⁶ Paying attention to one thing leads to attentional neglect of other things, including features of the environment or internal goals.¹⁶⁷ The ability to focus and shift attention is a key component of executive function.¹⁶⁸ Attentional hyper focus, without the executive function skills to distribute and shift attention to process more information, can lead to a diminishment in the overall quality of decision-making, changes in preferences for near term or delayed rewards, and inaccurate evaluations of risk.¹⁶⁹

Subsequent research has added support to the theory that financial scarcity creates attentional neglect.¹⁷⁰ A recent review of this literature

¹⁶² Colin M. MacLeod, *The Stroop Task: The “Gold Standard” of Attentional Measures*, 121 J. EXPERIMENTAL PSYCH. 12, 12–14 (1992) (describing the history and basic workings of the original task, which require the test taker to name the color of the ink in which an incompatible color word is printed, resulting in “unavoidable, stumbling interference”).

¹⁶³ Spears, *supra* note 159, at 8–9; Mark Muraven, Dianne M. Tice & Roy F. Baumeister, *Self-Control as Limited Resource: Regulatory Depletion Patterns*, 74 J. PERSONALITY & SOC. PSYCH. 774, 777 (1998).

¹⁶⁴ Muraven, Tice & Baumeister, *supra* note 163, at 786; Roy F. Baumeister et. al., *Ego Depletion: Is the Active Self a Limited Resource?*, 74 J. PERSONALITY & SOC. PSYCH. 1252, 1253 (1998); Mark Muraven & Roy F. Baumeister, *Self-Regulation and Depletion of Limited Resources: Does Self-Control Resemble a Muscle?*, 126 PSYCH. BULL. 247, 250 (2000); *see also* Spears, *supra* note 159, at 23–24.

¹⁶⁵ Xiaomeng Xu et al., *Failure to Replicate Depletion of Self-Control*, 9 PLOS ONE 1, 1, 4–5 (2014); John H. Lurquin et al., *No Evidence of the Ego-Depletion Effect Across Task Characteristics and Individual Differences: A Pre-Registered Study*, PLOS ONE (Feb. 10, 2016), <https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0147770&type=printable>; Evan C. Carter & Michael E. McCullough, *Publication Bias and the Limited Strength Model of Self-Control: Has the Evidence for Ego Depletion Been Overestimated?*, 5 FRONTIERS PSYCH. 1, 2 (2014); Evan C. Carter et al., *A Series of Meta-Analytic Tests of the Depletion Effect: Self-Control Does Not Seem to Rely On a Limited Resource*, 144 J. EXPERIMENTAL PSYCH. 796, 813 (2015).

¹⁶⁶ Muraven & Baumeister, *supra* note 164, at 248; Frank Tong, *Splitting the Spotlight of Visual Attention*, 42 NEURON 524, 524 (2004).

¹⁶⁷ *See generally* W A Johnston & V J Dark, *Selective Attention*, 37 ANN. REV. PSYCH. 43–75 (1986).

¹⁶⁸ *See generally* Peter Baggetta & Patricia A. Alexander, *Conceptualization and Operationalization of Executive Function*, 10 MIND BRAIN & EDUC. 10, 10–33 (2016).

¹⁶⁹ Brandon K. Ashinoff & Ahmad Abu-Akel, *HyperfOCUS: The Forgotten Frontier of Attention*, 85 PSYCH. RSCH. 1, 1–2 (2021).

¹⁷⁰ Mani et al., *supra* note 84, at 979.

looked specifically at empirical work on the concepts of risk aversion and time discounting, which is the tendency to value a lower near-term payoff over a higher but longer-term payoff.¹⁷¹ Synthesizing observational studies and natural experiments, the authors report that lower real world wealth is associated with higher risk aversion and higher discounting rates, even when controlling for absolute present income.¹⁷²

2. *Experiments on Poverty and Cognition*

Observational data, which makes up the lion's share of the literature of SES and brain/behavior research, cannot directly test causal relationships. Statistical mediation techniques testing for effects on SES of specific factors, such as stress or nutrition, "can narrow down possible causal accounts without directly proving causality."¹⁷³ But, experiments and natural experiments that manipulate available resources (or some other aspect of SES) can begin to give insight into causal relationships.¹⁷⁴

In one such experiment, shoppers in a New Jersey mall were asked to make a series of hypothetical financial decisions while considering one of four different financial scenarios in which they experienced sudden changes in income or unanticipated expenses.¹⁷⁵ In the "easy" condition, the amounts of money at stake were relatively small, such as a \$200 expense or a 5% pay cut; in the "hard" condition, the sums were significantly larger, such as a \$2,000 expense or a 15% pay cut.¹⁷⁶ While thinking about how to respond to the four scenarios, the participants performed two computerized cognitive tasks that measured fluid intelligence and cognitive control.¹⁷⁷ Participants were divided into "poor" and "rich" groups on the basis of their self-reported income.¹⁷⁸ Confronted with the financially "easy" scenarios, both poor and rich groups performed similarly on the fluid intelligence and cognitive control tests—an important baseline measure for testing the hypothesis that

¹⁷¹ Haushofer & Fehr, *supra* note 139, at 862.

¹⁷² *Id.* at 862–63. "Income" in an experimental setting appears to affect behavior. Experimentally manipulated "negative income shocks" result in higher discount rates, meaning that subjects who had just experienced a loss of task-earned income valued near-term rewards more than larger, long-term rewards as compared to subjects with the same (that is, low) task-earned assets who had not experienced a negative income shock. In other words, someone who had earned \$100 then lost \$50 acted more present-focused than someone who had earned \$50 and not lost any income. See Johannes Haushofer, Daniel Schunk & Ernst Fehr, *Negative Income Shocks Increase Discount Rates* (Univ. of Zurich, Working Paper, 2013).

¹⁷³ Farah, *supra* note 91, at 66.

¹⁷⁴ As Martha Farah observes, however, "the socioeconomic environment is not a one-time 'treatment' but a set of factors that impinge on the brain continually from prenatal life through maturity and senescence. . . . SES may shape the brain or, in noncausal language, [may] be manifest in the brain, in different ways at these different stages, further complicating research in this area." *Id.*

¹⁷⁵ Mani et al., *supra* note 84, at 977. Participants self-reported their household incomes, which ranged from about \$15,000 to \$115,000, with an average around \$74,000. *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ *Id.*

¹⁷⁸ *Id.*

the poor are inherently less cognitively endowed than the rich.¹⁷⁹ But, when confronted with the “hard” scenarios, which forced them to think about serious financial constraints, the poor subjects performed significantly worse than the rich on both tasks.¹⁸⁰ This effect was both reliable and substantial.¹⁸¹ The pattern of performance still held even when participants performed the cognitive tasks after they had finished responding to the scenarios—a result which rules out the possibility that contemplating the response while taking the cognitive tests caused the decrease in performance.¹⁸² Importantly, no such effects were found when participants were presented with scenarios that asked them to solve math problems similar to those presented in the financial scenarios, but without implicating any personal financial decisions.¹⁸³

This experiment was published together with a “natural experiment” field study that provided within-subject data in support of the hypothesis that poverty impedes cognitive function.¹⁸⁴ In the realm of behavioral studies, within-subject designs—which examine the same individuals at different points in time—have compelling statistical power (which is better for making causal inferences) because individuals effectively serve as their own control group, therefore minimizing concerns that observed differences between groups are due to some hidden independent variable. In this study, Mani and colleagues interviewed the same individual Indian farmers in different conditions of financial pressure: before and after the harvest of their sugarcane crops, the point at which they receive at least sixty percent of their annual income.¹⁸⁵ Before their harvest, farmers are under greater financial pressure, as evidenced by higher rates of pawning belongings, higher rates of borrowing, and subjective reports of difficulty paying ordinary bills.¹⁸⁶

On cognitive tests, the farmers performed markedly worse before harvest than after.¹⁸⁷ The pre-harvest effect held even during the few weeks between when the harvest was physically completed and when payment arrived, a period during which farmers were free from the physical labor of preparing for harvest and anxiety over crop size.¹⁸⁸ Explanatory mechanisms

¹⁷⁹ *Id.*

¹⁸⁰ *Id.*

¹⁸¹ *Id.*

¹⁸² *Id.* at 978.

¹⁸³ *Id.*

¹⁸⁴ *Id.* at 976.

¹⁸⁵ *Id.* at 979. Harvests take place at different times in the calendar as determined by sugar mill capacity. *Id.* That is, one farmer could harvest in June and another in August, such that July was post-harvest for the former and pre-harvest for the latter. *Id.*

¹⁸⁶ *Id.*

¹⁸⁷ *Id.* The farmers performed markedly worse on accuracy on the Raven’s and Stroop tasks, as well as on response time on the Stroop task. *Id.*

¹⁸⁸ *Id.*

of hunger¹⁸⁹ and stress¹⁹⁰ were also ruled out. Interestingly, the subjectively perceived intensity of farmers' pre-harvest financial constraints correlated negatively with their performance on the Raven's matrices and their time required to complete the Stroop tasks. In other words, the worse a farmer felt about his financial situation pre-harvest, the worse his performance on tests of fluid intelligence and cognitive control.

The sugarcane farmer study provided the first experimental evidence that the same person has different levels of cognitive function under different, temporary financial states. These findings were, the authors noted, "not about poor people, but about any people who find themselves poor."¹⁹¹ But, no study is without critique,¹⁹² and any single study is far from definitive. At the time of this writing, while the study has been widely cited, it has not been directly replicated.

Indeed, subsequent findings complicate the story. Leandro Carvalho and co-authors surveyed low-income U.S. households, some before payday and some after payday.¹⁹³ Like the sugarcane farmer study, the study observed real-world cash constraints and administered tests of cognitive function.¹⁹⁴ Unlike the sugarcane farmer study, households were not compared to themselves; before and after payday comparisons were made between groups, rather than within-group.¹⁹⁵ The online surveys also assessed risk aversion, use of heuristics, and monetary and non-monetary "intertemporal choices," where a person chooses how to allocate money or time in the near term or the future.¹⁹⁶

As expected, the before-payday group possessed fewer financial resources than the after-payday group, including twenty-two percent less cash and twenty percent lower expenditures.¹⁹⁷ Consistent with the work cited above, the before-payday group was more present-biased when

¹⁸⁹ *Id.* A pilot study indicated that farmers were spending nearly the same amount on food before and after the harvest, diminishing the potential that poor pre-harvest nutrition was driving the cognitive test results. *Id.*

¹⁹⁰ *Id.* at 979–80. The pilot study also collected heart rate and blood pressure information as biomarkers of stress. *Id.* While the farmers were more stressed before the harvest than after, the authors re-estimated the impact of the harvest on Stroop performance while controlling the stress biomarker factors, and they found that the effect remained significant. *Id.* This at least suggests that stress, as measured by those particular biomarkers, is not the only mechanism that impacts cognitive function. *Id.*

¹⁹¹ *Id.* at 980.

¹⁹² A few months after the study was published, *Science* published a Comment criticizing a few key methodological aspects of the study's design and interpretation, along with a response from the authors. Jelte M. Wicherts & Annemarie Zand Scholten, *Comment on "Poverty Impedes Cognitive Function"*, 342 *SCI.* 1169-d (2013); see also Anandi Mani et al., *Response to Comment on "Poverty Impedes Cognitive Function"*, 342 *SCI.* 1169-e (2013).

¹⁹³ Carvalho et al., *supra* note 145, at 260.

¹⁹⁴ *Id.* at 260–61.

¹⁹⁵ *Id.* at 267–69.

¹⁹⁶ *Id.* at 260–62, 265–66, 269–74.

¹⁹⁷ *Id.* at 267.

deciding how to allocate money.¹⁹⁸ This finding fits the hypothesis about attentional neglect (in this case, neglect of the future), but, as the authors point out, could also be driven by the “liquidity constraints” of simply having less cash now.¹⁹⁹ To assess this possibility, the researchers used a non-monetary task in which subjects were presented with the choice of answering a shorter survey sooner or a longer survey later.²⁰⁰ For this task, unlike the monetary task, there was no difference between the results of the before-payday and after-payday groups.²⁰¹ Carvalho and co-authors interpret this result as suggesting that liquidity constraints, as opposed to attentional neglect, explain present-bias behavior for tasks involving choices about money.²⁰² Finally, the two groups displayed no differences on four different tests of cognitive function—including the Stroop task used with the mall shoppers and sugarcane farmers.²⁰³ Taken together, the results indicate no evidence for the idea that poverty reduces the quality of decision-making or cognitive function.²⁰⁴

How can these results be reconciled? First, “small differences in context and timing of events can induce big differences in attention allocation and behavior,” so “accurate measurement of cognitive function effects may be highly sensitive to specific features of the income shock under study.”²⁰⁵ Responding to Carvalho et al.’s work, Mani et al. have noted that the payday subjects were receiving payments with high frequency (up to four times per month), only one of which was analyzed as the payday shock.²⁰⁶ This high frequency of payments “risks blurring the distinction between being in a before-versus-after payday situation”²⁰⁷ Moreover, subjects had a relatively wide window (i.e., seven days on either side of payday) to respond to the survey.²⁰⁸ Mani et al. reanalyzed a subset of Carvalho et al.’s data, finding that the Stroop test scores were significantly worse in the before-payday group relative to the after-payday group, once they accounted for the length of time until payday, and that performance worsened as payday approached (i.e., as

¹⁹⁸ *Id.* at 270.

¹⁹⁹ *Id.*

²⁰⁰ *Id.* at 265.

²⁰¹ *Id.* at 266.

²⁰² *Id.* at 272.

²⁰³ *Id.* at 266, 274–75, 275 tbl.6. Cognitive function was assessed with a working memory task, the Flanker test requiring an inhibitory control task, the Cognitive Reflection Test requiring a subject to inhibit a spontaneous and incorrect answer in favor of a deliberative and correct answer, and the numerical Stroop task used by Mani et al., *supra* note 84; Carvalho et al., *supra* note 145, at 266.

²⁰⁴ Carvalho et al., *supra* note 145, at 281.

²⁰⁵ Anandi Mani et al., *Scarcity and Cognitive Function Around Payday: A Conceptual and Empirical Analysis*, 5 SCARCITY & CONSUMER DECISION MAKING 365, 367 (2020).

²⁰⁶ *Id.*

²⁰⁷ *Id.* at 368.

²⁰⁸ *Id.*

acute financial stress reached its maximum).²⁰⁹ Moreover, Carvalho et al. only analyzed subjects who reported complete information on the timing of payments during the study period—a selection effect for those who acted in the absence of uncertainty.²¹⁰ In other fieldwork involving farmers at risk of drought, uncertainty about income played a larger role in impeding cognitive function.²¹¹ Because behavior is highly sensitive to context, research design matters greatly. The broad hypothesis that poverty impedes cognitive function is supported by the weight of the experimental evidence.

Subsequent experimental and quasi-experimental work gives several clues regarding other subtle causal pathways that may explain the relationship between poverty and cognitive function. A recent quasi-experimental study of the effects of debt relief on cognitive function suggests that reducing one's cognitive load attributable to debt may improve cognitive function, noting that the Indian farmers used harvest income to repay debts while the payday cycle studied by Carvalho et al. “appears insufficient to allow households to restructure their finances.”²¹² The study, in which debts were paid directly by social workers, demonstrated that debt relief—rather than income per se—significantly reduced anxiety symptoms and improved cognitive function as measured by an inhibitory control task.²¹³ Moreover, individuals who received debt relief that eliminated entire debt *accounts* showed improvements that individuals who received an equivalent amount of relief across a range of debts did not—a finding which lends support to the hypothesis that “debt mental accounting creates bandwidth taxes that impair cognitive processes,” meaning that it is not just the amount of money owed but also the structure of debt and the mental costs associated with keeping track of debt that matter for cognitive functioning.²¹⁴ Another recent study, which experimentally manipulated both income and asset shocks in a laboratory experiment setting, found that the framing of economic “loss”

²⁰⁹ *Id.* at 369–70.

²¹⁰ *Id.* at 374.

²¹¹ Guilherme Lichand & Anandi Mani, *Cognitive Droughts* 3–4 (Univ. of Zurich, Working Paper No. 341, 2020).

²¹² Qiyang Ong, Walter Theseira & Irene Y. H. Ng, *Reducing Debt Improves Psychological Functioning and Changes Decision-Making in the Poor*, 116 PROC. NAT'L ACAD. SCI. U.S. 7244, 7248 (2019).

²¹³ *Id.* at 7246–47.

²¹⁴ *Id.* at 7247–48. Ong et al. tested the hypothesis of cognitive load—“that a debtor who owes more debt accounts will bear greater bandwidth costs because mental-accounting processes cause each additional debt account to become a separate source of cognitive load”—by assessing the effects of debt-account elimination versus debt relief amount, as subjects received debt relief in a structure assigned to them by social workers. *Id.* at 7246. Even controlling for the total amount of debt relief, “reductions in debt accounts were associated with large and significant improvements in psychological and cognitive functioning and with reduced present bias.” *Id.* at 7247. Their results were controlled for training effects, calendar effects, reverse causality, and liquidity constraints. *Id.* at 7244, 7247.

may affect cognitive function.²¹⁵ Decreases in cognitive performance across tasks of working memory and fluid intelligence were driven by negative asset shocks (that is, the removal of accumulated points), rather than negative income shocks (that is, the decrease in the rate of point accumulation available).²¹⁶ While the Carvalho et al. study looked only at variations in income around payday, rather than assets, the Mani et al. study looked at income that represented sixty percent of annual income and thus had significant impact on household assets.²¹⁷ Finally, even if the mechanism by which poverty impacts cognition involves income, another vein of research suggests that “consumption smoothing around paydays can lower cognitive load and improve outcomes.”²¹⁸

It is also possible that a mediator variable, such as the subjective feeling of scarcity, directly impacts general cognitive function.²¹⁹ This possibility is reinforced by research showing that an experimentally-induced “‘scarcity’ mindset” affects neural mechanisms related to consumer decision-making, particularly in subjects who experienced a “scarcity” mindset following an “abundance” mindset.²²⁰ Another study experimentally induced feelings of low social status by (falsely) telling subjects where they ranked in socioeconomic status relative to others.²²¹ Those randomly assigned to be

²¹⁵ Francesco Bogliacino & Felipe Montealegre, *Do Negative Economic Shocks Affect Cognitive Function, Adherence to Social Norms and Loss Aversion?*, 6 J. ECON. SCI. ASS’N 57, 57 (2020).

²¹⁶ *Id.*

²¹⁷ Compare Carvalho et al., *supra* note 145, at 260–62, with Mani et al., *supra* note 84, at 979.

²¹⁸ See Mani et al., *supra* note 205, at 366 (citing Dylan Bellisle & David Marzahl, Restructuring the EITC: A Credit for the Modern Worker (2015) (unpublished manuscript) (on file with Center for Economic Progress, Washington DC), which provides an example of American workers whose EITC refunds were paid out periodically, rather than in a lump sum, showing greater economic security and lower financial stress).

²¹⁹ Mani et al. suggest that it is the subjective feeling of scarcity, rather than scarcity itself, that causes the cognitive effects. See Mani et al., *supra* note 205, at 366, 375. In the sugarcane farmer study, the farmers’ perceived intensity of financial stress (reported on a scale of 1–3) correlated negatively with cognitive performance. Mani et al., *supra* note 84, at 979. On the other hand, Carvalho et al. did not find that subjects’ responses to questions about being “preoccupied by scarcity” in the past 24 hours significantly differed in before- or after-payday groups, though the results only suggested (non-significantly) that the before-payday group was more preoccupied (though not different in cognitive functions). Carvalho et al., *supra* note 145, at 279. The authors acknowledged the need for more rigorous assessment of perceptions of scarcity. *Id.*

²²⁰ Inge Huijsmans et al., *A Scarcity Mindset Alters Neural Processing Underlying Consumer Decision Making*, 116 PROC. NAT’L ACAD. SCI. U.S. 11699, 11699 (2019). “Scarcity” and “abundance” were experimentally manipulated by providing tokens to play in simple cognitive games, separate from experimental monetary budgets used to make purchasing decisions. *Id.* at 11700.

²²¹ SHEEHY-SKEFFINGTON & REA, *supra* note 149, at 17 (citing Jennifer Sheehy-Skeffington, James Sidanius & Michael E. Price, *Decision-Making at the Bottom of the Hierarchy: The Cognitive Impact of Perceiving Oneself as Low in Socioeconomic Status*, Presentation to the Society of Personality and Social Psychology Pre-Conference on the Emerging Psychology of Social Class, San Diego, Cal. (2016)); see also Jennifer Sheehy-Skeffington, *At the Bottom of the Hierarchy: Low Subjective Socioeconomic Status Impairs Sense of Control and Executive Functioning, with Implications for Health-Related and Financial Decision-Making*, Paper Presentation at the European Human Behaviour & Evolution Association Conference, London, U.K. (2016).

told that they had lower socioeconomic status relative to others made more errors on a test of inhibitory control and other measures of executive functioning, and they performed worse on a complicated financial decision-making task.²²² In yet another study, lower-income participants and those primed to feel financially deprived exhibited excessive discounting of delayed rewards compared to higher-income participants and those primed to feel financial security—but a self-affirmation exercise engaging “sense of personal control” reduced the excessive delay discounting in both groups.²²³

What do these studies tell us about the real world? Mani et al. compare the effects on the cognition of the poor farmers and mall shoppers to that of losing a full night of sleep, which calibrates to approximately thirteen IQ points, or nearly one standard deviation from the mean.²²⁴ This effect size is, in the experimental context, dramatic. But, in the real-world, similar differences are seen between chronic alcoholics and normal adults, and between sixty-year-olds and forty-five-year-olds.²²⁵ In the debt relief study, the improvement in cognitive function also averaged an effect size “comparable to that of one night’s sleep deprivation” or “equivalent to the age adjustment required to normalize the score of a fifty-year-old with that of a twenty-three-year-old”²²⁶ This factor is a critical component of the discussion in Part III, which responds to the question: are poverty’s effects on cognition *disabling* or simply *disruptive*?²²⁷

The real world studies reviewed here often used variation in financial resources that was “temporary, anticipated, and perhaps equally important, [] anticipated to be temporary.”²²⁸ Available experimental data on these “economic shocks” does not yet address the question of whether detrimental changes in decision-making and cognition accompany more permanent shifts in income and socioeconomic status, like when someone becomes long-term unemployed, dependent on disability payments, or deprived of a stable and significant source of income through divorce or other loss of

²²² SHEEHY-SKEFFINGTON & REA, *supra* note 149, at 17.

²²³ Mehrad Moeini-Jazani, Sumaya Albaloooshi & Ingvild Müller Seljeseth, *Self-Affirmation Reduces Delay Discounting of the Financially Deprived*, 10 FRONTIERS PSYCH. 1, 10 (2019).

²²⁴ Mani et al., *supra* note 84, at 980.

²²⁵ *Id.* (citing Ben Jones & Oscar A. Parsons, *Impaired Abstracting Ability in Chronic Alcoholics*, 24 ARCHIVES GEN. PSYCHIATRY 71, 71 (1971); Marcel O. Pontón et al., *Normative Data Stratified by Age and Education for the Neuropsychological Screening Battery for Hispanics (NeSBHIS): Initial Report*, 2 J. INT’L NEUROPSYCH. SOC’Y 96, 96–97 (1996)).

²²⁶ Ong et al., *supra* note 212, at 7246.

²²⁷ Perhaps a more relevant comparison, if one were demanded, would be between the attentional disruptions and inhibitory control issues caused by poverty and the range of neurodiverse disabilities that warrant accommodation in higher education under the ADA. Is being poor and distracted by the demands of poverty really different than being distracted during a law school exam by attention deficit disorder? See generally MARK KELMAN & GILLIAN LESTER, *JUMPING THE QUEUE: AN INQUIRY INTO THE LEGAL TREATMENT OF STUDENTS WITH LEARNING DISABILITIES* (1997).

²²⁸ Carvalho et al., *supra* note 145, at 261.

economic partnership.²²⁹ If the attentional bandwidth theory is correct, poverty's effects on cognition would be most pronounced when a poor person experiences a major life change or disruption to established patterns, such as: having a child, gaining or losing a household member, losing or changing a job, experiencing illness or injury, moving, or experiencing such quasi-regular events as an unpredictable work schedule or a shift from school-year routines to summer child care.

3. *Areas of Cognitive Strength in Poverty*

The data reviewed above should not be interpreted as linking poverty with across-the-board cognitive decline or dysfunction. Attentional capacity and executive function are core cognitive tools that enable many complex behaviors, but they do not represent the entire suite of important cognitive functions.²³⁰ Cognitive deficits or impairments that manifest as disabilities can be highly selective.²³¹ And, consistent with the complex capacities of persons with all kinds of disabilities, there is accumulating evidence that persons in poverty display certain cognitive strengths and weaknesses.²³²

Some of these cognitive strengths manifest in particular contexts. A present-focus on decision-making may come at the expense of long-term planning, but, in uncertain and unstable environments, such a strategy may be rational.²³³ People who are poor are also generally more "attuned to the economic dimension of experience."²³⁴ Greater attentional focus on scarce resources can improve consumer behaviors, such as remembering what things cost²³⁵ and noticing hidden taxes.²³⁶ The poor may be more likely to consider tradeoffs and opportunity costs and thus more likely to behave as a

²²⁹ There is also a dearth of adult data on cognitive deficits that robustly controls for childhood poverty. A recent longitudinal study looked at the adult neural correlates of emotional regulation, recruiting participants and assessing family income at age nine and following up at age twenty-four. Subjects underwent functional magnetic resonance imaging while performing a task that required them to regulate negative feelings triggered by disturbing images. Childhood income was correlated with reduced prefrontal cortex activity and failure to suppress amygdala activation during attempts at emotional regulation; current adult income was not associated with neural activity during emotional regulation. Pilyoung Kim et al., *Effects of Childhood Poverty and Chronic Stress on Emotion Regulatory Brain Function in Adulthood*, 110 PROC. NAT'L ACAD. SCIS. 18442, 18443–45 (2013).

²³⁰ Philip D. Harvey, *Domains of Cognition and Their Assessment*, 21 DIALOGUES CLINICAL NEUROSCI. 227, 229 tbl.1 (2019).

²³¹ See, e.g., Adarsh Kohli, Samita Sharma & Susanta K. Padhy, *Specific Learning Disabilities: Issues that Remain Unanswered*, 40 INDIAN J. PSYCH. MED. 399, 399–400 (2018).

²³² See Willem E. Frankenhuys & Daniel Nettle, *The Strengths of People in Poverty*, 29 CURRENT DIRECTIONS PSYCH. SCI. 16, 17–19 (2020) (arguing that "present focus" is rational for people living in poverty and adaptive in uncertain environments, and highlighting evidence for rapid formation of memories in unpredictable situations).

²³³ *Id.* at 17.

²³⁴ Anuj K. Shah et al., *Money in the Mental Lives of the Poor*, 36 SOC. COGNITION 4, 6 (2018).

²³⁵ MULLAINATHAN & SHAFIR, *supra* note 162, at 93–95.

²³⁶ Jacob Goldin & Tatiana Homonoff, *Smoke Gets in Your Eyes: Cigarette Tax Salience and Regressivity*, 5 AM. ECON. J. 302, 323 (2013).

rational consumer who is less susceptible to certain context and framing effects.²³⁷ Moreover, the poor do better than the rich on some types of relatively routinized procedural tasks, even when reminded of their financial status.²³⁸ These strengths are intimately related to the aforementioned cognitive costs: the poor have thoughts about money triggered by mundane circumstances, which allows them to act rationally in certain respects but also poses an ever-present background distraction and commander of attention.²³⁹

There is, moreover, much that is unknown about the effect of poverty on the development of certain capacities, such as resilience. For example, one study reports that childhood adversity may enhance adult executive function.²⁴⁰ Another finds that unpredictable childhood environments may enhance certain aspects of working memory.²⁴¹ These findings underscore the complex and nuanced relationship between cognition and poverty, which brain and behavioral science is only beginning to understand.

III. DISRUPTING EXISTING CATEGORIES: THE CONSEQUENCES OF POVERTY AS DISABLING

The science reviewed in Part II supports the general theory that poverty causes problems in brain development and cognition in ways that meaningfully affect the lives of persons experiencing financial and socioeconomic adversity. In what follows, I argue that these findings undermine factual assumptions about the behaviors of persons in poverty—namely, that persons in poverty are somehow at fault for their “bad” economic or other choices in a way that persons with recognized cognitive, neurological, mental, or emotional disabilities are not. This argument proceeds in two parts. First, I argue that since poverty itself can be disabling in ways that are invisible, subtle, and under detected, treating poverty and disability as separate legal categories is both incoherent and harmful. I explain what follows from this claim, very generally, for law and policy. Second, I use this suggestion to consider broader possibilities through which advances in our understanding of human behavior from brain and behavioral science might be brought to bear on public law and policy. Brain science may support novel litigation strategies and brain-centered rhetoric may have the potential to influence political discourse and legislative reform, although this remains an open empirical question.

²³⁷ Anuj K. Shah, Eldar Shafir & Sendhil Mullainathan, *Scarcity Frames Value*, 26 PSYCH. SCI. 402, 403 (2015).

²³⁸ See Junhua Dang et al., *When the Poor Excel: Poverty Facilitates Procedural Learning*, 57 SCANDINAVIAN J. PSYCH. 288, 290 (2016).

²³⁹ Shah et al., *supra* note 234, at 8–9.

²⁴⁰ Chiraag Mittal et al., *Cognitive Adaptations to Stressful Environments: When Childhood Adversity Enhances Adult Executive Function*, 109 J. PERSONALITY & SOC. PSYCH. 604, 618 (2015).

²⁴¹ See generally Ethan S. Young et al., *Can an Unpredictable Childhood Environment Enhance Working Memory? Testing the Sensitized-Specialization Hypothesis*, 114 J. PERSONALITY & SOC. PSYCH. 891 (2018).

A. Poverty as Disability: The Conceptual De-Categorization

The claim that poverty is disabling is predominantly a descriptive and conceptual claim about legal and social categories. The brain data reviewed in Part II should not be interpreted as claiming that every person under a certain threshold of poverty falls within an existing statutory definition (or medical diagnosis) of disability. This is, in part, because such data is, at best, probabilistic and not deterministic (or diagnostic) in nature, but also because disability law is not monolithic. Indeed, understanding the effects of poverty as causing potentially disabling cognitive impairments goes to the heart of the tension that remains after the deliberate legislative and conceptual separation of the categories of “poverty” and “disability”—the tension between competing models of disability.²⁴² The data reviewed above provides new, evidence-based reasons that reanimate consideration of a “constitutive approach” to poverty and disability,²⁴³ which could resolve residual tensions between existing social welfare, social insurance, and civil rights approaches to disability.²⁴⁴ This is also an argument for bringing back discussion of “universalism” as a model for disability theory development and advocacy,²⁴⁵ particularly given the potentially huge numbers of people affected by cognitive (and other invisible) disabilities—whether “claimed” or not—and the reality that anyone may be “at risk” for events that destabilize their financial and physical health at any time.

But first, why disrupt conceptual boundaries if mere awareness of a new risk factor would suffice? Even if the data above were to simply highlight poverty as a *risk factor* for an invisible cognitive disability, practical challenges and structural tensions in current federal disability law would stay in place. But, for the sake of argument, if one were to analogize poverty to established or acknowledged categories of disability, it may be understood

²⁴² Mor, *supra* note 20, at 181; Diller, *supra* note 22, at 1006–07 (“[T]he differences in the goals and assumptions behind the two policies [the ADA and disability benefit programs] create tensions that give rise to some of the most important and difficult dilemmas in American disability law today.”).

²⁴³ Mor, *supra* note 20, at 184.

²⁴⁴ Weber, *supra* note 7, at 575–77; Bagenstos, *supra* note 5, at 10.

²⁴⁵ See, e.g., Jerome E. Bickenbach et al., *Models of Disablement, Universalism and the International Classification of Impairments, Disabilities and Handicaps*, 48 SOC. SCI. & MED. 1173, 1190 (1999) (arguing that a minority group analysis approach “misconceive[s] the nature of disablement and will likely have to give way eventually to a more inclusive, and more stable, political analysis—namely universalism—an analysis that can more effectively serve the political and social needs of disabled persons in the future”); Irving Kenneth Zola, *Toward the Necessary Universalizing of a Disability Policy*, 67 MILBANK Q. 401, 420 (1989), reprinted in 83 MILBANK Q. 1, 20 (2005) (“Only when we acknowledge the near universality of disability and that all its dimensions (including the biomedical) are part of the social process by which the meanings of disability are negotiated will it be possible fully to appreciate how general public policy can affect this issue.”). But see Doron Dorfman, *The Universal View of Disability and Its Danger to the Civil Rights Model*, in DEFINING THE BOUNDARIES OF DISABILITY: CRITICAL PERSPECTIVES 37, 39–40 (Licia Carlson & Matthew C. Murray eds., 2021) (arguing that “[U]sing a universal view of disability makes disability accommodations and disability rights seem like ‘special rights’ that give people with disabilities an unfair advantage. . . . The use of the universal view of disability may cause a backlash against disability rights by reaffirming the notion of ‘special treatment’ and ‘special rights.’”).

to give rise to an “invisible” brain-based disability akin to learning disabilities, mental illnesses, and cognitive, intellectual, and developmental disabilities. Society has yet to adequately contend with high percentages of people with invisible disabilities.²⁴⁶ Such disabilities may be a source of shame, non-disclosure, and even substantial compensatory effort to conceal.²⁴⁷ Some manifestations may impair one’s ability to even identify that accommodations are needed or to ask for them.²⁴⁸ It may be the case that a person in poverty functions *well* but not as well as they would without constant financial pressure; this could be analogized to a person with depression or anxiety who functions well enough and elects not to identify as disabled—or is unaware that they would qualify as “disabled”—even if accommodations would improve their life.²⁴⁹ Understanding poverty or low SES itself as a significant risk factor for disability should, at a minimum, heighten attention to screening for cognitive and neurological disabilities in all situations where rights and accommodations are afforded to persons with disabilities, but not to persons in “mere” poverty.²⁵⁰ But being aware of poverty as a risk factor does not get to the deeper questions of categorical boundaries that might lead to better understanding and more sweeping, beneficial societal change.

So, conceptual de-categorization goes beyond a simple matter of recognizing poverty as a mere risk factor for an invisible disability. But is this unique to poverty’s effects on the brain and cognition? Others have extensively pointed out how disability is “an outcome of being poor.”²⁵¹ Poverty creates all kinds of health risks from insufficient living standards, environmental toxins, inadequate healthcare, and stress that can lead to illness and impairment. The findings discussed weigh heavily alongside the massive literature on social determinants of health, but they may also bring new enthusiasm for a welfare-oriented perspective on disability law that has been dominated by civil rights-based frameworks.²⁵² Evidence that poverty *itself*, not its sequelae, causes problems in brain development and certain cognitive capacities may be the more direct, proximate narrative necessary to call into question why the categories were separated in law and policy.

Conceptual de-categorization does not require adherence to a narrow, medicalized model of disability. The effects of poverty on brain and

²⁴⁶ Harris, *supra* note 46, at 898–99 n.12 (discussing disability privacy).

²⁴⁷ Ariana Cernius, *Enforcing the Americans with Disabilities Act for the “Invisibly Disabled”*: *Not a Handout, Just a Hand*, 25 GEO. J. POVERTY L. & POL’Y 35, 56 (2017).

²⁴⁸ *Id.* at 52.

²⁴⁹ See Eyer, *supra* note 71, at 589–90.

²⁵⁰ See *supra* notes 9–14.

²⁵¹ Mor, *supra* note 20, at 183.

²⁵² *Id.*

cognition fit the multiple theories of disability.²⁵³ The science reviewed in Part II suggests that poverty's effects on the brain—both in terms of childhood development and in terms of acute impacts on adult functioning—fit within an impairment-focused, medicalized model of disability.²⁵⁴ A child growing up in poverty experiences less brain development than they otherwise would; an adult in acute poverty performs certain cognitive functions less well than they otherwise would.²⁵⁵ As a primary “accommodation” or remedy, giving people money (without imposing cognitively demanding barriers to access) may “cure” or alleviate these “impairments.”²⁵⁶

But poverty's effects on the brain and cognition also fit within a social model of disability, according to which disability is primarily a manifestation of a relation between an individual and her social environment.²⁵⁷ This perspective would highlight that the impact of poverty's effects on the brain is consequential to a person's functioning only in virtue of the context of poverty itself.²⁵⁸ For example, in adults, evidence shows that merely experiencing a “scarcity mindset” or “time poverty” impairs attention and executive function performance.²⁵⁹ But the real-world impact of such lapses is serious and functionally consequential when someone is living without a financial safety net. The parking ticket that results from failing to notice the street cleaning signs is an annoyance to someone with enough money, but it is devastating to someone without.²⁶⁰ Other problems sometimes identified as the “root causes” of poverty, such as addiction, abuse, and mental health conditions, are, in fact, experienced at all levels of the socioeconomic spectrum—but, for someone with money, the life consequences of these problems are likely to be much less severe.²⁶¹ Moreover, programs designed to help alleviate poverty often require that applicants continuously establish and maintain eligibility for benefits, placing significant cognitive demands on

²⁵³ This is in contrast to the realist versions of how disability laws in practice fall short. Belt & Dorfman, *supra* note 5, at 23; Bagenstos, *supra* note 5, at 181.

²⁵⁴ See generally Frankenhuis & Nettle, *supra* note 232; Belt & Dorfman, *supra* note 5, at 181 n.29.

²⁵⁵ Belt & Dorfman, *supra* note 5, at 181 n.29.

²⁵⁶ See generally Frankenhuis & Nettle, *supra* note 232; Belt & Dorfman, *supra* note 5, at 181 n.29.

²⁵⁷ Belt & Dorfman, *supra* note 5, at 181 n.29.

²⁵⁸ *Id.*

²⁵⁹ Inge Huijsmans et al., *supra* note 220, at 11699.

²⁶⁰ See GUSTAFSON, *supra* note 59, at 209–19 (listing the extensive literature on criminalization of poverty, fines and fees, etc.).

²⁶¹ Oren Cass, *The Biden and Romney Family Plans Go Too Far*, N.Y. TIMES (Mar. 2, 2021), <https://www.nytimes.com/2021/03/02/opinion/child-allowance-credit-romney.html> (“Money itself does little to address many of poverty's root causes, like addiction and abuse; unmanaged chronic- and mental-health conditions; family instability; poor financial planning; inability to find, hold or succeed in a job; and so forth.”). Cass's position fails to acknowledge that money does, in fact, mitigate the severity of the consequences of addiction, provides resources to manage health and mental health conditions, and helps people engage in financial planning. These “root causes” happen to persons up and down the socioeconomic spectrum, but they lead to serious negative outcomes for persons in poverty.

those already cognitively burdened.²⁶² The complex policies and procedures, appointments, and requirements that a person must fulfill in order to establish or maintain benefits eligibility impacts some users' abilities to access the benefits in a manner that is analogous to how a person who uses a wheelchair is "disabled" by the architecture of a building that only has stairs.²⁶³ Once we understand that poverty has serious impacts on the brain and cognition, the social model of disability allows us to see the way in which welfare systems may be overlooking—and even exacerbating—invisible disabilities caused by the very situation they are meant to address. More broadly, in an economy that increasingly compensates cognitive-based work and in a society that increasingly values "intelligence," the impacts of even subtle cognitive problems are magnified.²⁶⁴

If we accept that recent findings in brain and behavior science blur the conceptual boundaries between poverty and disability, what does this mean for law and policy? The implications may be very broad, considering the range of positive and negative rights (theoretically) that are afforded to persons with disabilities but not to persons in "mere" poverty.²⁶⁵ They may also be narrower, if disability rights were to move towards the concept of universalism and a focus on institutional design and social policy benefitting all and accommodating difference where needed.²⁶⁶

With respect strictly to poverty policy, cash benefits are perhaps the provision that would be directly shaped by viewing poverty as disabling. Welfare programs would require greater accessibility (that is, less sludge) and be the source of remediation of the impairment (that is, more money as direct cash transfers). This could include tweaks to existing systems, such as automated²⁶⁷ or greatly simplified benefits determinations.²⁶⁸ But it could also support more radical changes in social policy, such as universal basic income, negative income tax, and child grants. "More money" and "less

²⁶² Julian Christensen et al., *Human Capital and Administrative Burden: The Role of Cognitive Resources in Citizen-State Interactions*, 80 PUB. ADMIN. REV. 127, 127 (2020); see also *infra* text accompanying notes 303–309.

²⁶³ See Cernius, *supra* note 247, at 41 n.38 .

²⁶⁴ See generally David H. Freedman, *The War on Stupid People*, ATLANTIC (Aug. 15, 2016), <https://www.theatlantic.com/magazine/archive/2016/07/the-war-on-stupid-people/485618> last visited Oct 1, 2021).

²⁶⁵ See generally Pokempner & Roberts, *supra* note 8, at 426 (2001).

²⁶⁶ See Ari Ne'eman, *What If Disability Rights Were for Everyone?*, N.Y. TIMES (Oct. 1, 2021), <https://www.nytimes.com/2021/10/01/opinion/disability-rights-biden-us.html>.

²⁶⁷ See generally Bertrand et al., *supra* note 140, at 15; Ryan Calo & Danielle Keats Citron, *The Automated Administrative State: A Crisis of Legitimacy*, 70 EMORY L.J. 797, 819 (2021). Automation is not an automatic panacea; automation's outcomes depend on the built-in biases, assumptions, and decision-making procedures that reflect the values of an existing system of resource allocation. See VIRGINIA EUBANKS, *AUTOMATING INEQUALITY: HOW HIGH-TECH TOOLS PROFILE, POLICE, AND PUNISH THE POOR* 26 (2018).

²⁶⁸ See, e.g., Cernius, *supra* note 247, at 42 (arguing that the ADA has failed people with "invisible" disabilities in accessing social welfare such as General Relief programs in California).

sludge” are interventions that make sense under the “social causation” model of cognition problems and impaired behavior in poverty, due to “the in-principle corrigibility of SES disparities in brain structure and function.”²⁶⁹ Giving people money may remediate the cause of the cognitive disruptions, and making it easier for people to access the money to which they are entitled may be accommodation for the cognitively burdensome task of navigating welfare bureaucracy. Additionally, making it easier for people to navigate administrative bureaucracy may free up attentional cognitive resources that they can use for caregiving, job-seeking, and other activities of self-determination.²⁷⁰

These changes address the U.S. welfare system, but not disability laws per se. So is full conceptual de-categorization necessary? Understanding poverty as causing brain and cognitive problems that can give rise to invisible disabilities brings new clarity to the importance of recognizing social welfare interventions as a purpose of disability law.²⁷¹ Confronted with evidence that poverty itself causes brain and cognitive changes, it seems impossible to ignore the residual tensions from the categorical separation of poverty and disability.²⁷² A shift to a “constitutive approach” sensitive to longstanding concerns of paternalism would have policy implications such as the return of disability allowances framed as an acknowledgment of the collective responsibility for disability²⁷³ and an investment in individual capacity.²⁷⁴ It may be a pathway to reinvigorate consideration of poverty as at least a quasi-protected class,²⁷⁵ and it may spark discussion of whether claims to rights could and should include a right to healthy brain development. Finally, broad understanding of the widespread experience of invisible brain-based disability should shift policymakers’ attention towards prevention rather than remediation via anti-discrimination. The brain and behavioral science give us not only a window to visualizing these implications, but possibly also some pathways towards their implementation, as discussed next.

B. *The Proximate Mechanisms of Change*

If we understand poverty itself as disabling and thus deserving of a dignified, rights-based approach to citizenship and participation in social

²⁶⁹ Farah, *supra* note 91, at 64.

²⁷⁰ See, e.g., Christensen et al., *supra* note 262, at 131–33; Murphy, *supra* note 19, at 1355, 1370, 1390.

²⁷¹ See Bagenstos, *supra* note 5, at 4–8; Weber, *supra* note 54, at 577; Mor, *supra* note 20.

²⁷² Mor, *supra* note 20; see also Diller, *supra* note 35.

²⁷³ Mor, *supra* note 20, at 184.

²⁷⁴ Murphy, *supra* note 19, at 1390–91.

²⁷⁵ See Matthew Diller, *Poverty Lawyering in the Golden Age*, 93 MICH. L. REV. 1401 (1995) (reviewing BRUTAL NEED: LAWYERS AND THE WELFARE RIGHTS MOVEMENT, 1960-1973 by Martha F. Davis and recounting the failure of the effort to use litigation to establish any right to welfare); Michael E. Waterstone, *Disability Constitutional Law*, 63 EMORY L.J. 527 (2014); *City of Cleburne v. Cleburne Living Center, Inc.*, 473 U.S. 432 (1985).

and democratic life, there are several ways in which brain science could be leveraged to implement change. It could provide empirical support for evidence-based administrative or regulatory policy, offer new litigation options for groups of people who are poor to assert their rights, and possibly reshape public opinion by providing new rhetorical frames. The first method is one of broad concern with respect to whether poverty is treated as a disability under current law and policy, or whether an entirely different and broader social welfare system (that is, more money, less sludge for all) is imagined. The second avenue of impact litigation asks whether disability law as is might be used instrumentally to help persons in poverty obtain benefits to which they are putatively entitled. This is in no way meant to minimize the sludge, cognitive taxes, and administrative burden that persons with disabilities deal with in our current system,²⁷⁶ which should further animate discussion of universal social welfare policy design. The third issue of rhetorical support briefly surveys a familiar concern for brain science and law: can science change minds and therefore change politics?

1. *Evidence-Based Policy*

Bringing brain science into the policy discussion is consistent with other forms of “evidence-based policy,” in which policy is determined by the weight of the overall evidence, even if the current findings cannot provide perfect precision as to the strength of causal relationships and predicted outcomes. Perfect causal certainty and perfect prediction of efficacy are not required for implementing social policy interventions for complex problems, since imperfect evidence supporting strong theories can still provide guidance regarding which policy levers are likely to be most effective. Evidence-based policy can be supported by theory and tested by observation of theory-driven social programs.

That said, brain science in law has certainly seen its share of overclaims.²⁷⁷ According to Amy Wax, the claim that the “so-called neuroscience of deprivation” is relevant to social policy represents another such instance.²⁷⁸ She argues that the notion that “discoveries of brain science can help generate more effective strategies for addressing poverty and deprivation” poses two serious problems.²⁷⁹ First, neuroscience (apart from behavioral sciences) does not make a “unique, indispensable contribution” to the study of deprivation’s effects on behavior and is thus “inessential clutter” that yields no “independent policy payoff.”²⁸⁰ Second, she argues that

²⁷⁶ See Emens, *supra* note 34.

²⁷⁷ See generally SALLY SATEL & SCOTT O. LILIENFELD, *BRAINWASHED: THE SEDUCTIVE APPEAL OF MINDLESS NEUROSCIENCE* (2015)

²⁷⁸ Wax, *supra* note 18, at 239.

²⁷⁹ *Id.* at 240.

²⁸⁰ *Id.* at 240, 242, 287. Wax argues that neuroscience “can do no better than the behavioral evidence itself. It thus adds nothing to policy design, over and above what behavioral science can yield.” *Id.* at 242.

because neuroscience studies do not definitively establish causation, they cannot serve as a reliable guide to policy.²⁸¹ Professor Wax acknowledges that the causal story is not a binary one of nature-or-nurture but rather a complex gene x environment interaction.²⁸² She nevertheless argues that because environmental factors “may not be the sole or even the dominant mechanism by which poor parents produce poor children,”²⁸³ policy interventions acting upon the external factors are pointless.²⁸⁴ She further critiques the “deprivation neuroscience” literature for not including a study of genetic variables and the secondary literature for “show[ing] a similar tendency to focus on social circumstances” rather than genetic inheritance.²⁸⁵

Professor Wax’s first argument—that neuroscience makes no distinctive contribution to the study of deprivation’s effects—is too pessimistic.²⁸⁶ As part of the brain and behavioral sciences, neuroscience studies focusing on brain structure and function contribute to our understanding of behavior for the reasons described in this Article. Brain measures provide the foundations for understanding the underlying mechanisms of behavior, and “differentiating between [these] underlying neural systems may point to different causal pathways and avenues for intervention.”²⁸⁷ Understanding mechanisms can help parse subtle (or future) behavioral differences.²⁸⁸ It is true that such knowledge presently does not lead directly to different types of interventions,

²⁸¹ *Id.* at 241.

²⁸² *Id.* at 253–55 (summarizing examples of intelligence and obesity as “show[ing] that the relationships of genes to environment, and genotype to phenotype, are complex and unpredictable” and that “[this] complexity applies as well to the contribution of environmental and genetic factors to the brain and behavioral disparities associated with SES”).

²⁸³ *Id.* at 256.

²⁸⁴ *Id.* at 260 (“Until these possibilities are sorted out, speculation about whether particular policies or interventions can reduce the effects of poverty is thus unwarranted.”).

²⁸⁵ *Id.* at 261. Professor Wax later acknowledges that parent-child brain and behavioral studies are not methodologically equipped to “disentangle the genetic versus environmental determinants of the brain size and morphology,” *id.* at 263, because measuring brains or any behavioral trait is already a product of gene x’s environment. *Id.* at 264. Behavioral genetics studies use different methods, such as twin and siblings raised in different environments, to answer such questions, despite their own methodological limitations including retrospective design.

²⁸⁶ To the extent that Professor Wax’s argument is that neuroscience must make a “unique, indispensable” contribution to policy discussions, *id.* at 239 (emphasis added), there is also no requirement, in making science-informed social policy, that any particular narrowly-drawn subfield of science stand completely on its own to “establish [or] predict the effectiveness of any policy designed to address social adversity and its supposed effects,” *id.* at 242.

²⁸⁷ Duncan et al., *supra* note 83, at 10.11. Such differences “are often evident at an early age, well before general cognitive or behavioral differences can be detected and can thus serve as an early indicator of the development of cognitive disparities.” *Id.* (citing Sharon E. Fox, Pat Levitt & Charles A. Nelson III, *How the Timing and Quality of Early Experiences Influence the Development of Brain Architecture*, 81 CHILD DEV. 28 (2010)).

²⁸⁸ For example, a handful of studies have found differences in neural processing—but not behavioral outcomes—when children of different SES performed a task requiring them to filter out auditory background noise. See, e.g., Courtney Stevens, Brittni Lauinger, & Helen Neville, *Differences in the Neural Mechanisms of Selective Attention in Children from Different Socioeconomic Backgrounds: An Event-Related Brain Potential Study*, 12 DEVELOPMENTAL SCI. 634, 635–636 (2009).

but the research is in its early stages and there is, in principle, no reason to dismiss its potential for doing so. Brain science, by revealing mechanisms of behavior, deepens our understanding and ability to investigate behavioral issues of real-life consequence.

Professor Wax's second argument, in its strongest form, is the claim that we should prefer non-intervention on the basis of hypothetical evidence that another (i.e., genetic) factor might be the dominant cause of behaviors in poverty. This argument has both descriptive and normative elements. With respect to the descriptive element, there are some valid points—namely, that certain brain and behavioral traits do seem to be heritable, though their genetics are not yet well understood.²⁸⁹ But the conclusion drawn from this possibility—that a brain-science-framed discussion of policy should cease because genetics *might* be a dominant cause—fails for both scientific and logical reasons. Scientifically, it is, at present, pure speculation that genes are a dominant cause of brain and behavioral “impairments” or differences seen in low SES (that is, the “social selection” hypothesis). As Professor Wax acknowledges, gene x environmental interactions are incredibly complex and are still being investigated. Moreover, the weight of the evidence reviewed in Part II for a “social causation” hypothesis is empirically much stronger.

Given Professor Wax's acknowledgment that the science is, at worst, complex and uncertain, her argument depends upon the normative claim that we should prefer a social policy of inaction rather than one of intervention in the face of uncertainty. This is fundamentally a moral claim on which Professor Wax and I disagree. If one starts from the normative premise that affirmative policy action should be used to try and benefit society, ethical and legal considerations will restrict the targets of policy to environmental or external influences; even if genetic factors contribute to some portion of the variance in cognition and behavior of persons in poverty, policymakers

²⁸⁹ Elise Roze et al., *Developmental Trajectories From Birth to School Age in Healthy Term-Born Children*, 126 PEDIATRICS e1134, e1139–40 (2010) (demonstrating no link between maternal education and primary school age intelligence once maternal intelligence is accounted for). *But see* Laura M. Betancourt, Nancy L. Brodsky & Hallam Hurt, *Socioeconomic (SES) Differences in Language Are Evident in Female Infants at 7 Months of Age*, 91 EARLY HUM. DEV. 719, 719 (2015) (finding that parental SES and infant intelligence link holds even when mother's intelligence taken into account). *See generally* Eric Turkheimer & Erin E. Horn, *Interactions Between Socioeconomic Status and Components of Variation in Cognitive Ability*, in BEHAVIOR GENETICS OF COGNITION ACROSS THE LIFESPAN 41–68 (Deborah Finkel & Chandra A. Reynolds eds., 2014) (reanalyzing data and discussing repeated, independent, replications in American samples of the “Scarr-Rowe interaction” finding that the heritability of intelligence in seven year-old children is moderated by parental socioeconomic status). Wax primarily adopts the critique of the potential and limitations of behavioral genetics from a “widely-read” blog post about a peer-reviewed scientific publication that does, in fact, contain the qualifications regarding causal inference that the blog author seeks. Wax, *supra* note 18, at 256–57.

cannot permissibly intervene to alter the genetic profile of the population.²⁹⁰ That outcomes may be influenced by *both* genetics and environment, in complex ways, is not itself a reason to refrain altogether from policy interventions with respect to environmental influences on SES.

Rather, where science necessarily leaves off, policy experimentation should begin.²⁹¹ Professor Wax's repeated demand that the brain and behavioral science "predict[] the effectiveness"²⁹² of such policies holds up an impossible standard for science to influence policy. No such demands of prediction precision are made in other domains—including macroeconomics or environmental regulation—where detailed causal mechanisms may never be fully understood because experiments capturing and controlling all possible variables are logistically and/or ethically impossible.

Moreover, the government frequently engages in policy experimentalism, with the aim of producing "deliberative information" about the "efficacy of a particular policy intervention at achieving its goals."²⁹³ Targeted antipoverty programs have arguably been the failed subject of deliberative, decentralized, privatized efforts at democratic experimentalism, with "[m]ost major changes in antipoverty policy result[ing] from large external shocks that briefly focus attention on these problems and programs."²⁹⁴ Perhaps Professor Wax's critique is that brain-centered research does not furnish a scalpel, as it does not contribute a novel or specific targeted antipoverty policy that fits within the existing policy framework, which ties cash benefits to participation in the labor market. Such a critique, however, assumes that a scalpel is the right tool for the circumstances. The science reviewed above, however, suggests that we should take a sledgehammer to the current benefits system—that is, we should give people more money with less hassle to get it.

²⁹⁰ Professor Wax correctly identifies that randomized controlled trials are limited in what they can reveal regarding the mechanisms of relationships between SES and brain/behavior because of the complex contributions to "disadvantage" that are "difficult or unethical to manipulate. Children cannot be assigned to different families, home environments, cultures, neighborhoods, or parents." Wax, *supra* note 18, at 265.

²⁹¹ There are large literatures on methods of "experimentalist governance," including an experimental design literature focused on arguments that the government should conduct policy experiments that are rigorously designed. See generally Hannah J. Wiseman & Dave Owen, *Federal Laboratories of Democracy*, 52 UC DAVIS L. REV. 1119 (2018).

²⁹² Wax, *supra* note 18, at 241–42, 285.

²⁹³ See Michael A. Livermore, *The Perils of Experimentation*, 126 YALE L.J. 636, 640 (2017).

²⁹⁴ David A. Super, *Laboratories of Destitution: Democratic Experimentalism and the Failure of Antipoverty Law*, 157 U. PA. L. REV. 541, 547 (2008).

2. *Novel and Collective Litigation Strategies*

In the distributed federalism that makes up social and welfare policy, litigation is an important tool for social change.²⁹⁵ Litigation for structural changes to policies affecting people in poverty, however, has had limited success, and, since the 1970s, courts have limited legal rights and protections for people in poverty.²⁹⁶ Understanding poverty as disabling via its impacts on the brain and cognition may offer new litigation options for people who are poor to assert rights and obtain remedies. Bringing such suits as experimentalist interventions can contribute to broader legislative and social change.²⁹⁷ To provide one example of how this might work, I will focus on the case of cash transfers.

The idea of bringing new types of claims under the ambit of disability law, while not entirely novel, remains controversial. Kimani Paul-Emile, for example, has argued that understanding Blackness as disabling would create options for addressing racial discrimination that are currently unavailable in race-focused antidiscrimination law, since disability law requires no showing of malicious intent and requires remedies that are disability-conscious.²⁹⁸ She identifies disability law as a “new approach to addressing discrimination and systemic inequality that has been hiding in plain sight.”²⁹⁹ Understanding poverty as having physiological effects in the brain is also in line with the growing phenomenon of claiming “medical civil rights,” which Craig Konnoth documents as happening across different legal contexts, to obtain legal rights that are “more robust than those accompanying other disadvantage, such as poverty or even racial discrimination.”³⁰⁰ Indeed, recent years have seen disability civil rights claims under the ADA and Section 504 of the Rehabilitation Act brought by students claiming that complex trauma constitutes a disability requiring structural accommodations—not individualized plans—in school.³⁰¹ Both cases resulted in district court

²⁹⁵ See generally Abram Chayes, *The Role of the Judge in Public Law Litigation*, 89 HARV. L. REV. 1281 (1976); Charles F. Sabel & William H. Simon, *Destabilization Rights: How Public Law Litigation Succeeds*, 117 HARV. L. REV. 1016 (2004).

²⁹⁶ See generally MARTHA F. DAVIS, *BRUTAL NEED: LAWYERS AND THE WELFARE RIGHTS MOVEMENT, 1960–73* (1993); *THE POVERTY LAW CANON: EXPLORING THE MAJOR CASES* (Marie A. Failinger & Ezra Rosser eds., 2016).

²⁹⁷ See generally Sabel & Simon, *supra* note 295.

²⁹⁸ Kimani Paul-Emile, *Blackness as Disability?*, 106 GEO. L.J. 293, 296–97 (2018).

²⁹⁹ *Id.* at 296.

³⁰⁰ Konnoth, *supra* note 5, at 1173.

³⁰¹ See, e.g., *P.P. v. Compton Unified Sch. Dist.*, 135 F. Supp. 3d 1098, 1104–06 (C.D. Cal. 2015). In the order denying defendants’ motion to dismiss, the court recognized that trauma and its effects were cognizable as a “physical or mental impairment” within the meaning of Section 504 and the ADA. *Id.* at 1109–11; see also *Stephen C. v. Bureau of Indian Educ.*, No. CV-17-08004-PCT, 2018 WL 1871457, at *3–4 (D. Ariz. Mar. 29, 2018). The *Stephen C.* case settled these claims in 2020. Appellants’ Opening Brief at *11 n.6, *Stephen C. v. Bureau of Indian Educ.*, No. 3:17-CV-08004-SPL, 2021 WL 2672928 (9th Cir. June 25, 2021) (No. 21-15097). *But see* Nicole Buonocore Porter, *Explaining “Not Disabled”*

rulings that the effects of trauma, in light of accumulated evidence about the neurobiological effects of trauma, could constitute impairments for the purposes of the ADA and Section 504.³⁰²

In the case of cash benefits, understanding poverty as causing cognitive disabilities makes possible the following claim: the burdensome processes and procedures required to establish and maintain benefits are a form of discrimination on the basis of a disability. That is, poverty as disability offers the potential to attack the sticky problem of “bureaucratic disenfranchisement”³⁰³ or, simply, “sludge.”³⁰⁴

To receive the public benefits for which they are eligible, people who are poor have to do many difficult tasks: navigate complex bureaucracies, fulfill demanding schedules and requirements, and keep track of ever-changing and increasingly restrictive rules and policies. While these requirements fall squarely in the realm of “sludge,” a more precise term is “bureaucratic disenfranchisement.”³⁰⁵ These processes, whether intentionally or incidentally, reduce usage of the benefits. Some of these deterrents are evident from the sheer complexity of published regulations and guidelines for program access.³⁰⁶ Others are invisible except upon intimate observation of an applicant’s interactions with the system, where she may encounter *ad hoc* policies and informal techniques to discourage requests for assistance.³⁰⁷ It is

Cases Ten Years after the ADAAA: A Story of Ignorance, Incompetence, and Possibly Animus, 26 GEO. J. ON POVERTY L. & POL’Y 383, 384–85 (2019) (noting that many courts continue to conclude that individuals do not meet the statutory definition of having a disability).

³⁰² For a summary of both cases, see Benjamin C. Hattem, Note, *Carceral Trauma and Disability Law*, 72 STAN. L. REV. 995, 1021–26 (2020).

³⁰³ Michael Lipsky, *Bureaucratic Disenfranchisement in Social Welfare Programs*, 58 SOC. SERV. REV. 3, 3 (1984).

³⁰⁴ Richard Thaler, *Nudge, Not Sludge*, 361 SCIENCE 431 (2018); CASS R. SUNSTEIN, *SLUDGE: WHAT STOPS US FROM GETTING THINGS DONE AND WHAT TO DO ABOUT IT* (2021). Sludge and bureaucratic administrative burdens are not unique to welfare or cash benefits transfers, and thus, this idea may have broader implications for understanding how hard-to-access and hard-to-understand governmental processes could be understood as discriminating against some of the people who most need them.

³⁰⁵ Lipsky, *supra* note 303 at 3. Michael Lipsky coined the phrase to refer to:

[L]argely obscure ‘bureaucratic’ actions and inactions of public authorities . . . Bureaucratic disenfranchisement takes place in the hidden recesses of routine or obscure decision making, or the unobtrusive nondecisions of policymakers. Therefore, it tends to allocate entitlement without the accountability that normally restrains government excesses or allows full discussion of critical distributive issues.

Id. at 3.

³⁰⁶ The current Los Angeles County General Relief program policy is over four hundred pages long. See *General Relief Policy*, CNTY. OF LOS ANGELES, http://file.lacounty.gov/SDSInter/dpss/237572_GeneralReliefPolicyHandbook.pdf (last visited June 17, 2021). General Relief provides a monthly cash grant of up to \$221. See *General Relief*, L.A. CNTY. DEP’T SOC. SERV., <https://dpss.lacounty.gov/en/cash/gr.html> (last visited June 17, 2021).

³⁰⁷ See Susan D. Bennett, “*No Relief But Upon the Terms of Coming Into the House*”—*Controlled Spaces, Invisible Disenfranchisements, and Homelessness in an Urban Shelter System*, 104 YALE L.J. 2157 (1995); DOUG O’BRIEN ET AL., *AM.’S SECOND HARVEST, THE RED TAPE DIVIDE: STATE-BY-STATE*

in the actual delivery of services that “[t]he contradiction between the precatory or even mandatory language of welfare statutes and the reality encountered by the poor” becomes apparent.³⁰⁸ In some instances, the “bizarre maze of paperwork and procedures” encountered by applicants for public benefits has been revealed to be a deliberate strategy of exclusion, adopted by system managers in order to limit payouts to meet budgetary requirements.³⁰⁹

Bureaucratic disenfranchisement and “sludge” have proven difficult to dislodge or change through litigation. In the realm of welfare rights, cases have been piecemeal and usually result in incremental negotiated settlements rather than in robust declarations of legal rights. For example, in the 1980s, the Los Angeles County General Relief program was the subject of a series of lawsuits aimed at removing “obstacles placed in the path of indigent homeless people,” including strict documentary identification requirements, a computer system that would terminate benefits without human review or intervention, and automatic disqualification periods for violating program rules.³¹⁰ A series of targeted lawsuits seeking narrow relief (and achieving it through a preliminary injunction and negotiated changes in procedures)³¹¹ culminated in a 1987 suit alleging that the County’s policies and procedures had the unlawful purpose and effect of depriving indigent residents of the benefits to which they were statutorily entitled.³¹² The suit settled in 1991, achieving changes to the administration of the General Relief program that alleviated some of the most onerous and capricious eligibility and recertification requirements.³¹³ Other litigants have been successful with limited procedural due process challenges in certain circumstances.³¹⁴

REVIEW OF FOOD STAMP APPLICATIONS (2001), <https://www.issuefab.org/resources/95/95.pdf>; Cary LaCheen, *Using Title II of the Americans with Disabilities Act on Behalf of Clients in TANF Programs*, 8 GEO. J. ON POVERTY L. & POL’Y 1, 27 (2001) (describing how formal and informal “diversion” practices seeking to divert a potential applicant family from receiving assistance include “active discouragement seeking to deter individuals from filing applications” and “efforts to dissuade and discourage applicants by burdening the process of seeking assistance”).

³⁰⁸ Gary L. Blasi, *Litigation Strategies for Addressing Bureaucratic Disenfranchisement*, 16 N.Y.U. REV. L. & SOC. CHANGE 591, 592 (1988).

³⁰⁹ *Id.* at 595. Gary Blasi identified the insidious nature of bureaucratic disenfranchisement: it is largely hidden from public view and shielded from judicial scrutiny because it operates under ostensibly neutral bureaucratic administrative methods for the purposes of “quality control.” *Id.* at 593 n.14.

³¹⁰ *Id.* at 594–95, 595 n.24, 596 n.33.

³¹¹ *Id.* at 596, 598.

³¹² Second Amended Complaint, *City of Los Angeles v. Cnty. of Los Angeles*, No. C655274 (Cal. Super. Ct. May 25, 1990).

³¹³ *Id.*; Stipulation and Agreement in Settlement of Taxpayer and Class Action, *City of Los Angeles*, No. C655274 (Cal. Super. Ct. June 9, 1991).

³¹⁴ *Perdue v. Murphy*, 938 N.E.2d 766, 773, 775 (Ind. Ct. App. 2010), *vacated sub nom.* *Perdue v. Gargano*, 962 N.E.2d 640 (Ind. 2011), *vacated sub nom.* *Perdue v. Gargano*, 964 N.E.2d 825 (Ind. 2012) (affirming the holding that notices informing applicants of denial of public benefits violated Constitutional procedural due process rights, because an individual receiving such an adverse notice is unreasonably “expected to determine which item or items are missing or presumed missing based on the recipient’s understanding of past instructions”). The expectation of proving an agency’s error without

Disability claims, such as those brought under Title II of the ADA (“Title II”), may offer a new angle of attack on burdensome, onerous, and ultimately exclusionary processes and procedures—sludge—on the theory that they are discriminatory. Title II prohibits state and local government entities from discriminating on the basis of disability.³¹⁵ A public entity must reasonably modify its policies, practices, or procedures to avoid discrimination, unless such modifications would fundamentally alter the nature of the service, program, or activity.³¹⁶ Any program administered by a government entity (or contracted by the government to a private provider) is subject to Title II’s antidiscrimination provisions. This includes any program delivering cash or in-kind benefits to needy persons, such as a state’s distribution of federal funds under TANF.³¹⁷

To the extent that means-tested benefits systems—like TANF, SNAP, Medicaid programs, or General Assistance statutes—have complicated and difficult processes and procedures to establish and maintain eligibility, these processes and procedures are certainly even more onerous for people who suffer from cognitive disabilities resulting from their poverty. It seems possible to argue that such processes and procedures unlawfully discriminate against people with cognitive disabilities, as they serve to deny meaningful access to people who simply lack the cognitive resources to cope with burdens that put high demands on attention and executive function. To the extent that those disabilities are subtle (and invisible) but *caused* by the socioeconomic conditions endemic to the groups that the benefits programs are designed to serve, there is also an argument for class-based, system-wide remedies rather than for individual accommodations.

To state a claim for discrimination under Title II, a plaintiff must allege that he or she is an individual with a disability; is otherwise qualified to

specific information was particularly unreasonable in the context of persons applying for public benefits, who “likely ha[ve] a physical, mental, or economic disadvantage (or combination thereof).” *Id.*

³¹⁵ “Subject to the provisions of this subchapter, no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of a public entity, or be subjected to discrimination by any such entity.” 42 U.S.C. § 12132. Title II’s prohibitions on discrimination related to public services are distinct from Title I’s prohibition of discrimination in employment and Title III’s prohibition of discrimination related to public accommodations.

³¹⁶ 28 C.F.R. § 35.130(b)(7) (2018).

³¹⁷ The Office of Civil Rights of the U.S. Department of Health and Human Services issued guidance asserting that the ADA and Section 504 of the Rehabilitation Act apply to many aspects of TANF program design and implementation, including “the prohibition on unnecessary eligibility standards that screen out people with disabilities” and the “application of the ADA to private entities under contract with TANF programs.” LaCheen, *supra* note 307, at 57; *see also* ADA TITLE II TECHNICAL ASSISTANCE MANUAL § II-3.6100 (1994), <http://www.ada.gov/taman2.html>. The Technical Assistance Manual is the Justice Department’s interpretation of the regulations it is authorized to promulgate under the ADA. As such, courts must give the manual “substantial deference and [it] will be disregarded only if plainly erroneous or inconsistent with the regulation.” *Bay Area Addiction Rsch. & Treatment, Inc. v. City of Antioch*, 179 F.3d 725, 732 n.11 (9th Cir. 1999) (internal quotation marks omitted) (citation omitted).

participate in or receive the benefits of the public entity's services, programs, or activities; and was excluded from such services, programs, or activities or otherwise discriminated against by the public entity by reason of the disability.³¹⁸ Title II is a basis for class actions enforcing plaintiffs' right of access to public benefits.³¹⁹ Plaintiffs advancing a "reasonable accommodation" claim are not required to establish discriminatory impact—that is, plaintiffs are not required to identify a comparison class of "similarly situated individuals given preferential treatment" under the challenged program or practice.³²⁰ The issue for the courts is one of structural equality and the accommodation of difference, rather than formal equality via equal treatment of individuals. When considering liability for ADA violations, the central question for a court is whether disabled persons were denied "meaningful access" to state-provided services.³²¹

The ADA and Section 504 use definitions of disability that rely on functional consequence, not diagnostic criteria or causal origin. The ADA defines disability either as "a physical or mental impairment that substantially limits one or more major life activities of such individual,"³²² or as a record of

³¹⁸ See, e.g., *Thompson v. Davis*, 295 F.3d 890, 895 (9th Cir. 2002), *cert. denied*, 538 U.S. 921 (2003). The 1990 ADA extended protections provided by the Rehabilitation Act of 1973, which prohibited any public entity receiving federal financial assistance from discriminating on the basis of disability. Section 504 of the Rehabilitation Act provides that "[n]o otherwise qualified individual with a disability in the United States . . . shall, solely by reason of his or her disability, be excluded from the participation in, or be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." 29 U.S.C. § 794(a) (2006). There is no significant difference in analysis of the rights and obligations created by the ADA and the Rehabilitation Act, and courts generally treat the ADA and the Rehabilitation Act as coextensive. See 42 U.S.C. § 12133 ("The remedies, procedures, and rights set forth in [the Rehabilitation Act] shall be the remedies, procedures, and rights [applicable to ADA claims]."); *Bragdon v. Abbott*, 524 U.S. 624, 632 (1998) (stating that courts are required to "construe the ADA to grant at least as much protection as provided by the regulations implementing the Rehabilitation Act"); see also *Henrietta D. v. Bloomberg*, 331 F.3d 261, 272 (2d Cir. 2003) ("[U]nless one of those subtle distinctions [between Title II of the ADA and Section 504 of the Rehabilitation Act] is pertinent to a particular case, we treat claims under the two statutes identically."); *Collings v. Longview Fibre Co.*, 63 F.3d 828, 832 n.3 (9th Cir. 1995) ("The legislative history of the ADA indicates that Congress intended judicial interpretation of the Rehabilitation Act be incorporated by reference when interpreting the ADA."). Title II of the ADA expressly provides that the remedies, procedures, and rights set forth in 29 U.S.C. § 794(a) shall be the remedies, procedures, and rights Title II provides to any person alleging discrimination on the basis of disability in violation of 42 U.S.C. § 12132. The ADA prohibition on discrimination "by reason of such disability" is broader than the Rehabilitation Act's "solely by reason of his or her disability," but for the purposes of this analysis I refer for simplicity only to the ADA, which applies regardless of a program's receipt of federal funds.

³¹⁹ See *Bloomberg*, 331 F.3d at 261, 279.

³²⁰ *Id.* at 273 ("[T]he relevant inquiry asks not whether the benefits available to persons with disabilities and to others are actually equal, but whether those with disabilities are as a practical matter able to access benefits to which they are legally entitled.").

³²¹ *Id.* (citing *Alexander v. Choate*, 469 U.S. 287, 301 (1985)); see also *K.M. ex rel. Bright v. Tustin Unified Sch. Dist.*, 725 F.3d 1088, 1102 (9th Cir. 2013) ("[T]o challenge a facially neutral government policy on the ground that it has a disparate impact on people with disabilities, the policy must have the effect of denying meaningful access to public services.").

³²² 42 U.S.C. § 12102(1)(A).

or being regarded as having such an impairment.³²³ “Major life activities” are broadly defined as including, but not limited to: “caring for oneself, performing manual tasks, seeing, hearing, . . . speaking, breathing, learning, reading, concentrating, thinking, communicating, and working.”³²⁴ “[M]ajor life activity also includes the operation[s] of major bodily function[s], including but not limited to functions of the . . . neurological, brain, respiratory, circulatory, endocrine, and reproductive functions.”³²⁵ An impairment need only limit one major life activity, and even an episodic impairment is a disability if it substantially limits a major life activity when it is active.³²⁶ The regulations broadly define mental impairments as including “[a]ny mental or psychological disorder, such as mental retardation, organic brain syndrome, emotional or mental illness, and specific learning disabilities.”³²⁷

Congress had made clear that courts’ focus should not be on determining whether a plaintiff is “truly” disabled. In the ADA Amendments Act of 2008, Congress repudiated a series of Supreme Court decisions that had narrowed the interpretation of the definitions of “disability” and “substantially limit a major life activity,” and it shifted the focus to issues of standing—whether someone was, in fact, disabled.³²⁸ Congress’ express intent in amending the ADA was to convey “that the primary object of attention in cases brought under the ADA should be on whether entities covered under the ADA have complied with their obligations, and to convey that the question of whether an individual’s impairment is a disability under the ADA should not demand extensive analysis.” Following the heightened federal pleading requirements adopted around the time of the 2008 amendments,³²⁹ early empirical work in the employment discrimination context found substantial confusion in lower courts over the level of specificity needed to allege a disability claim.³³⁰ By 2012, however, other commentators had found that courts were appropriately applying a lower

³²³ *Id.* § 12102(1)(B)–(C).

³²⁴ *Id.* § 12102(2)(A).

³²⁵ *Id.* § 12102(2)(B).

³²⁶ *Id.* § 12102(4)(C)–(D).

³²⁷ 28 C.F.R. § 35.104(1)(i)(B) (2011).

³²⁸ ADA Amendments Act of 2008, Pub. L. No. 110-325, 122 Stat. 3553 (2008) (hereinafter “ADAA of 2008”); 42 U.S.C. § 12102(4)(A)–(B) (“The definition of disability in this chapter shall be construed in favor of broad coverage of individuals under this chapter, to the maximum extent permitted by the terms of this chapter. The term ‘substantially limits’ shall be interpreted consistently with the findings and purposes of the ADA Amendments Act of 2008.”); see also Stephen F. Befort, *An Empirical Examination of Case Outcomes Under the ADA Amendments Act*, 70 WASH. & LEE L. REV. 2027, 2036–37, 2043 (2013).

³²⁹ See generally *Bell Atlantic Corp. v. Twombly*, 550 U.S. 544 (2007); *Ashcroft v. Iqbal*, 556 U.S. 662 (2009).

³³⁰ See Joseph Seiner, *Pleading Disability*, 51 B.C. L. REV. 95, 97–98 (2010).

threshold in favor of broader coverage of a range of disabilities, in line with Congressional intent.³³¹

Turning to the present example: is someone who experiences cognitive deficits because they live in poverty disabled within the meaning of the ADA? If such deficits in attentional focus, executive function, and preference for delaying gratification substantially impact their ability to learn, think, concentrate, communicate, or work, it is certainly plausible that such a person has a claim.³³² It is then possible to imagine the existence of a set of plaintiffs who, because of their poverty, have mental impairments in the form of cognitive deficits that substantially impair their ability to learn, think, concentrate, communicate, and work. Census data indicates that, other than ambulatory disabilities, cognitive limitations are the most frequent form of self-reported disabilities among adult cash aid recipients in Los Angeles County.³³³ Moreover, researchers estimate that disabilities reported in public-assistance records are actually under-reported by half.³³⁴ Given that cognitive limitations are common, under-reported, and invisible (unlike many ambulatory disabilities), it is a virtual certainty that persons with cognitive disabilities—including those cognitive disabilities caused or exacerbated by poverty—are underserved in public assistance programs because they cannot meaningfully access their benefits.

Since it is functional impairments, rather than their etiological cause, that do the legal work in alleging a disability, what is the legal relevance of the causal relationship between poverty and cognitive or neurological deficits? There are at least two distinctive roles that the identification of this causal mechanism might play in legal proceedings. First, articulating the causal relationship may facilitate identification and acceptance of disabling cognitive impairments that are often subtle, invisible, and overlooked, particularly in the context of persistent sociopolitical assumptions that

³³¹ Kevin M. Barry, *Exactly What Congress Intended?*, 17 EMP. RTS. & EMP. POL'Y J. 5, 27–32 (2013); Nicole Buonocore Porter, *The New ADA Backlash*, 82 TENN. L. REV. 1, 45–47 (2014). *But see* Porter, *supra* note 301, at 392 (asserting that courts wrongly decided that a plaintiff was not disabled in 210 out of 976 cases from 2014 to 2018, a substantial portion of which seem due to the court's apparent ignorance of the law or plaintiff's attorney incompetence).

³³² The strength of the disability argument grows if the science continues to develop, and the cognitive deficits identified in assessment tasks are clearly translated into real-world impairments. Even more interesting is consideration from the perspective of the social model of disability, where an intrinsic impairment is a disability only by virtue of the surrounding circumstances. *See supra* text accompanying note 318. It seems plausible to imagine that the very act of filling out complex and demanding application requirements—all with money worries at the front of mind—is intrinsically taxing of even a minorly-impaired baseline level of cognitive capabilities so as to push someone into a more severely “disabled” state.

³³³ DANIEL FLAMING & PATRICK BURNS, *ECON. ROUNDTABLE, ALL ALONE: ANTECEDENTS OF CHRONIC HOMELESS* 1, 47 (2015). Cognitive limitations mean “difficulty remembering, concentrating, or making decisions.” *Id.* at 47.

³³⁴ *Id.* at 48 fig.28.

poverty is the result of individual failure or cultural pathology.³³⁵ Second, identifying poverty as a cause of disabling cognitive deficits may facilitate obtaining structural injunctive relief through class certification. Though etiological causation is not a component of the ADA's definition of disability, it may help to draw boundaries around a substantially large putative class whose injuries could only be appreciated by the class-wide perspective or effectively redressed by systemic reform. This would be consistent with both the ADA's theory of structural equality and its purpose as an antidiscrimination law.³³⁶ It is also consistent with the post-2008 ADA, which directs courts to focus on whether plaintiff(s) have been denied "meaningful access," rather than whether they are "truly" disabled, and there is reason for optimism given the relative success of class actions under Titles II and III of the ADA.³³⁷ This is not to say that *all* impoverished persons suffer from such deficits. It is a certainty that some people are resilient while others are more severely affected by a common set of environmental and economic circumstances.³³⁸ But if poverty imposes significant cognitive deficits on a subset of people, there is no principled reason why these deficits should not constitute a mental impairment under the ADA.³³⁹

3. *Rhetorical Power: An Empirical Question*

The notion that persons in poverty are blameworthy for their behavior, and thus responsible for their destitution, is deeply rooted in American culture. While policy experts have argued that disability and poverty should be addressed by comprehensive social programs that address structural inequalities,³⁴⁰ these ideas have not found significant purchase in the public discourse or the political system, which are dominated by narratives and stereotypes about individual behavior—both lauded and lamented—and an overall cultural ethos of individualism. It is possible that a brain-centered

³³⁵ This idea also relates to the concept of "emergent disabilities": how poverty creates disabilities through unequal distribution of health risks "such as HIV/AIDS, asthma, cognitive problems resulting from lead poisoning, and effects of low birth weight and lack of prenatal care." Pokempner & Roberts, *supra* note 8, at 457 (citing Seelman & Sweeney, *supra* note 20, at 2–13).

³³⁶ Linda Hamilton Krieger, *Introduction: Backlash Against the ADA*, in *BACKLASH AGAINST THE ADA: REINTERPRETING DISABILITY RIGHTS I* (Linda Hamilton Krieger ed., 2003).

³³⁷ See Jasmine Harris, *Disability Employment Class Actions*, in *A GUIDE TO CIVIL PROCEDURE: INTEGRATING CRITICAL LEGAL PERSPECTIVES* (Brooke Coleman, Suzette Malveaux, Portia Pedro, & Elizabeth Porter eds., forthcoming July 2022).

³³⁸ See, e.g., Staci M. Zolkoski & Lyndal M. Bullock, *Resilience in Children and Youth: A Review*, 34 *CHILD. & YOUTH SERVS. REV.* 2295, 2297–30 (2012).

³³⁹ In addition to cognitive deficits fitting under the "mental impairments" prong, the early science documenting the substantial effects of growing up in poverty on children's brains may also support an argument for a physical impairment similar to that which the district court credited in the Compton case: "Plaintiffs have adequately alleged . . . that complex trauma can result in neurobiological effects constituting a physical impairment for purposes of the Acts." *P.P. v. Compton Unified Sch. Dist.*, 135 F. Supp. 3d 1098, 1110–11 (C.D. Cal. 2015).

³⁴⁰ See, e.g., Pokempner & Roberts, *supra* note 8; Fremstad, *supra* note 20.

narrative about the relationship between poverty and disability could undermine these dominant narratives.

Whether new information about how the brain works will change peoples' minds about how and why individuals behave the way they do is an empirical question that remains inconclusively answered. That said, brain-centered explanations and frameworks have resonated elsewhere in fomenting legal and policy change. In high-stakes and high-profile litigation about the constitutionality of extreme criminal punishments for juveniles, findings from neuroscience have made several appearances.³⁴¹ The Supreme Court's references to brain science show that, at a minimum, neuroscience and its promise of a mechanistic explanation for behavior captures the attention of legal decision-makers.³⁴²

Juvenile justice policy developments are also instructive about some of the limitations of drawing upon brain science to bring about legal change. The need to integrate neuroscience research findings into theory before application to law and policy is illustrated in Terry Maroney's cogent critique of the "false promise" of adolescent brain science in juvenile justice policy.³⁴³ Professor Maroney argues "because developmental neuroscience supports only probabilistic generalizations about youth as a class, it is unhelpful in making highly individualized determinations such as formation of intent," and, partly for this reason, it has had a limited impact in the courts.³⁴⁴ Where it has had an impact on policy, she argues, it has done so by reinforcing the theory that "young people differ from adults in systematic ways directly relevant to their relative culpability, deterrability, and potential for rehabilitation" at a fairly high level of generality.³⁴⁵ As evidence for this claim, she notes that when courts have positively cited developmental neuroscience, doing so is often as part of a "roster of reasons" for reaching a particular result³⁴⁶—incorporating neuroscience findings alongside

³⁴¹ See *infra* notes 342–347; Laurence Steinberg, *The Influence of Neuroscience on U.S. Supreme Court Decisions About Adolescents' Criminal Culpability*, 14 NATURE REV. NEUROSCIENCE 513, 513 (2013).

³⁴² *Graham v. Florida*, 560 U.S. 48, 68 (2010) ("As petitioner's amici point out, developments in psychology and brain science continue to show fundamental differences between juvenile and adult minds. For example, parts of the brain involved in behavior control continue to mature through late adolescence."); see also *Miller v. Alabama*, 567 U.S. 460, 471–72 (2012).

³⁴³ Terry A. Maroney, *The False Promise of Adolescent Brain Science in Juvenile Justice*, 85 NOTRE DAME L. REV. 89, 176 (2009) [hereinafter Maroney, *The False Promise*]; see also Terry A. Maroney, *Adolescent Brain Science After Graham v. Florida*, 86 NOTRE DAME L. REV. 765 (2011) (updating and reiterating her critique).

³⁴⁴ Maroney, *The False Promise*, *supra* note 343, at 94.

³⁴⁵ *Id.*

³⁴⁶ *Id.* at 172.

sociological and psychological data—which underscores the need for a body of evidence supporting a theory applied to law and policy.³⁴⁷

In contrast, the “medical model” of addiction as a brain disease, while popular amongst scientists, has been far less successful as an argument for doctrinal changes in diminished or mitigated responsibility for criminal behavior or drug decriminalization,³⁴⁸ though it has contributed to the rise of diversionary models of “drug courts.”³⁴⁹ In order to understand why brain and behavioral science explanations for behavior have been more effective in bringing about changes in juvenile justice policy than in drug policy, we need to understand, more generally, when and why these explanations are persuasive to judges, lawmakers, and the general public.

We do not yet have sufficient answers to these questions. The empirical evidence on the persuasive value of brain science has been mixed.³⁵⁰ A recent study suggested that neuroscience, like other scientific evidence, is

³⁴⁷ *Roper v. Simmons*, 543 U.S. 551, 569 (2005). The Court relied in part on developmental principles to hold that the juvenile death penalty violates the Eighth Amendment, and in doing so, referenced the proffered “scientific” studies of counsel and amici. Maroney documents the body of efforts to raise brain science in a variety of juvenile and young adult cases, where they seem to have foundered in no small part (but not entirely) on a version of the group-to-individual inference problem where record evidence indicated a defendant’s high levels of planning and forethought as inconsistent with the general premise that juveniles lack adult levels of such capacity. She concludes “that the persuasive power of adolescent brain science in the courts was falling far short of expectations” in a hostile doctrinal environment. Maroney, *The False Promise*, *supra* note 343, at 769. The Court more explicitly invoked “brain science” in support of the proposition that juvenile and adult minds are fundamentally different in ways that mitigated strongly against the constitutionality of a sentence of life without parole in *Graham*. *Graham*, 560 U.S. at 68.

³⁴⁸ Douglas Husak & Emily Murphy, *The Relevance of the Neuroscience of Addiction to the Criminal Law*, in *A PRIMER ON CRIMINAL LAW AND NEUROSCIENCE: A CONTRIBUTION OF THE LAW AND NEUROSCIENCE PROJECT, SUPPORTED BY THE MACARTHUR FOUNDATION 216* (Stephen Morse & Adina Roskies eds., 2013).

³⁴⁹ Emily R. Murphy, *Paved with Good Intentions: Sentencing Alternatives from Neuroscience and the Policy of Problem-Solving Courts*, 37 L. & PSYCH. REV. 83, 103–04 (2013); Eric J. Miller, *Drugs, Courts, and the New Penology*, 20 STAN. L. & POL’Y REV. 417, 422–23 (2009).

³⁵⁰ Gwendolyn Sandoboe & Iris Berent, *The Seductive Allure of the Brain: Dualism and Lay Perceptions of Neuroscience*, 38 COGNITIVE NEUROPSYCH. 205, 205 (2021); Nicholas Scurich, *What Do Experimental Simulations Tell Us About the Effect of Neuro/genetic Evidence on Jurors?*, 5 J.L. & BIOSCIS. 204, 205 (2018); Francis X. Shen et al., *The Limited Effect of Electroencephalography Memory Recognition Evidence on Assessments of Defendant Credibility*, 4 J.L. & BIOSCIS. 330, 332 (2017) (“Across nearly 30 previous studies, including over 50 unique experiments, the only result researchers can agree upon is that there are ‘conflicting results.’”); D.A. Baker et al., *Making Sense of Research on the Neuroimage Bias*, 26 PUB. UNDERSTANDING SCI. 251, 252 (2017); N.J. Schweitzer et al., *Neuroimages as Evidence in a Mens Rea Defense: No Impact*, 17 PSYCH. PUB. POL. & L. 357, 358–60 (2011); Deena Skolnick Weisberg et al., *The Seductive Allure of Neuroscience Explanations*, 20 J. COGNITIVE NEUROSCI. 470, 470 (2008); David P. McCabe & Alan Castel, *Seeing is Believing: The Effect of Brain Images on Judgments of Scientific Reasoning*, 107 COGNITION 343, 350–51 (2008); Michael J. Saks et al., *The Impact of Neuroimages in the Sentencing Phase of Capital Trials*, 11 J. EMPIRICAL L. STUD. 105, 107–09 (2014); Edith Greene & Brian S. Cahill, *Effects of Neuroimaging Evidence on Mock Juror Decision Making*, 30 BEHAV. SCI. & L. 280, 292–94 (2012); David Gruber & Jacob A. Dickerson, *Persuasive Images in Popular Science: Testing Judgments of Scientific Reasoning and Credibility*, 21 PUB. UNDERSTANDING SCI. 938, 946 (2012).

susceptible to motivated reasoning: people tend to credit or discredit identical neuroscience information in a manner that reinforces their preexisting beliefs.³⁵¹ A more comprehensive review concluded that an overarching theory of when neuroscience (and particularly neuroimages) unduly persuades “is still out of reach,” though concerns that neuroscience would be granted “undeserved scientific credibility” are not supported by the body of evidence.³⁵² The persuasive value of brain and behavioral science, like other complex scientific evidence, likely depends upon background political and social factors.

This is not to say that the rhetorical power of framing poverty as disabling should be dismissed as incapable of influencing existing beliefs. To the extent that brain and behavioral science explain human behavior in a way that is different than previously assumed, they hold the potential to change policy by changing minds. Brain and behavioral science may change minds in a unique way: not by appealing to abstract concepts of fairness, capacity, motivation, or dignitary harms—all of which could be more directly addressed with sociological evidence demonstrating how the poor and those with cognitive disabilities experience the world. Rather, by tapping into the promise of an explanatory mechanism of behavior, brain science takes the decision-maker a step closer to core assumptions about causes of behavior that are often difficult to access in the reasoning process. Here, evidence from brain science may prove sufficiently disruptive to permit reexamination of the factual underpinnings of the causes of behavior in poverty.

IV. OBJECTIONS AND RISKS: THE POTENTIAL FOR BACKLASH

The proposal advanced in this Article—to understand poverty as disabling—is sweeping and controversial, with implications and consequences far beyond the example of administration of cash benefits. The conceptual de-categorization of poverty and disability invites a suite of specific objections and counterarguments, as well as more general concerns inherent to relying on science to dismantle categories that reflect societal norms and values.

A. *Objections and Brief Responses*

This section considers three related yet distinct objections to the project of understanding poverty as disabling. The first objection holds that poverty is not a “real” disability because not all who are poor are disabled. The second objection claims that expanding the concept of “disability” to include a much larger number of people will weaken the concept itself and consequently

³⁵¹ Nicholas Scurich & Adam Shniderman, *The Selective Allure of Neuroscientific Explanations*, 9 PLOS ONE e107529 (2014).

³⁵² Baker et al., *supra* note 350, at 256.

threaten fragile disability rights victories. The final objection argues that, rather than solving problems of stigmatization, locating impoverished people within the category of disability may exacerbate such problems.

1. *Poverty as Disabling Is Overinclusive*

Some may insist that understanding poverty as disabling will prove overinclusive. Because not everyone in poverty is cognitively disabled, how are we to know who is “really” disabled and who is not? Line-drawing problems abound, and they may be irresolvable. Given the challenges of operationalizing “poverty” and “socioeconomic status” and the messiness of the data,³⁵³ what circumstances would qualify? How deep in poverty does a person have to be in order to be considered disabled, and would the current means of assessing poverty, such as the federal poverty line, be an adequate cutoff for categorizing disability? Moreover, if *subjective* perceptions of scarcity are the driving mechanism behind cognitive deficits induced by poverty, would that mean that anyone who *feels* poor—irrespective of their actual economic status—would be cognitively disabled in the legally-relevant sense? Why not leave the established categories in place and simply do better screening for cognitive disabilities, regardless of their cause?

In response to these questions, it is important to keep in mind that the focus of the categorical shakeup suggested in this Article is to promote structural changes, rather than individualized accommodations. First, this focus reflects the strengths of the group-based data, because it is true that poverty’s effects on cognition are wide-ranging and that the data are probabilistic rather than individually diagnostic.³⁵⁴ Second, it reflects the reality that cognitive disabilities that may present as mild but have a meaningful impact on people’s lives are often subtle, difficult to detect, and thus routinely underdiagnosed and unacknowledged, particularly along dimensions of existing inequities such as race.³⁵⁵ Also, a particular degree of severity is not demanded by the ADA (in contrast to SSI and SSDI classifications).³⁵⁶ Cognitive disabilities are also highly stigmatized, as

³⁵³ See *supra* notes 81–84 and accompanying text.

³⁵⁴ See *supra* Part II.

³⁵⁵ See LaToya Baldwin Clark, *Beyond Bias: Cultural Capital in Anti-Discrimination Law*, 53 HARV. C.R.-C.L. L. REV. 381, 383–84 (2018) (recounting racial disparities in receiving special education services and arguing that they are due to special education allocation processes more than true differences in base rates); Pokempner & Roberts, *supra* note 8, at 438–39.

³⁵⁶ “Unlike the definition of disability used by the Social Security Disability (SSD) and Supplemental Security Income (SSI) programs, the ADA has no listings of conditions or specific levels of severity for particular conditions that an individual must meet.” LaCheen, *supra* note 307, at 41; see also 42 U.S.C. §§ 423(d)(1)(A), 1382c(a)(3)(A) (defining “disability” in SSI and SSD as the 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 twelve months); *Cleveland v. Pol’y Mgmt. Sys. Corp.*, 526 U.S. 795,

discussed below, and individuals may be understandably reluctant to claim that living in poverty has made it more difficult for them to think or make “good” choices because they fear being labeled as unintelligent or irrational. Third, a focus on structural changes is consistent with both the ADA’s theory of structural equality and its purpose as an antidiscrimination law.³⁵⁷ Finally, this focus accounts for the possibly significant (but unknowable) base rates of cognitive deficits or differences in the population of people accessing services.

In the context of cash benefits, an individual plaintiff with cognitive disabilities who alleges an onerous and thus discriminatory application process might be reasonably accommodated without fundamentally altering the program requirements, perhaps by being provided personalized assistance in filling out forms or extra time or opportunities to meet the requirements.³⁵⁸ But, as a practical matter, if a *significant proportion* of people accessing the benefits program are disabled as a result of poverty-induced cognitive deficits, such individualized assistance (and the initial assessment of untold numbers of applicants) becomes burdensome and substantiates an agency’s defense that the accommodation would “fundamentally alter” the nature of the program or service.³⁵⁹ If litigated, the necessity and feasibility of structural modification

801–03 (1999) (finding that ADA and SSDI classifications were not co-extensive, but merely overlapping). As explained by Anita Silvers and Michael Ashley Stein:

[The Court’s] ruling that the claim to be a member of the SSDI disability classification is not a claim about being disabled in fact, but is instead a claim about satisfying a certain procedure. Thus, on the Court’s own analysis, the claim that one is ADA-eligible is a factual one, but the claim that one is SSDI eligible is a contextually-related legal construction.

Anita Silvers & Michael Ashley Stein, *Disability, Equal Protection, and the Supreme Court: Standing at the Crossroads of Progressive and Retrogressive Logic in Constitutional Classification*, 35 U. MICH. J.L. REFORM 81, 130 (2001).

³⁵⁷ See Krieger, *supra* note 336, at 3–5; Linda Hamilton Krieger, *Afterword: Socio-Legal Backlash*, 21 BERKELEY J. EMP. & LAB. L. 476, 480–81 (2000).

³⁵⁸ See, e.g., McGary v. City of Portland, 386 F.3d 1259, 1269–70 (9th Cir. 2004); see also LaCheen, *supra* note 307, at 105. When describing a potential disparate impact claim, LaCheen notes:

For example, a rule requiring people to fill out written forms to obtain services, *coupled with a failure to provide help with these forms*, will be a barrier to services to some people with learning disabilities, mental retardation, visual impairments, and other impairments, because these disabilities make reading, writing, and seeing difficult.

Id. (emphasis added).

³⁵⁹ A public entity must make “reasonable modifications in policies, practices, or procedures when the modifications are necessary to avoid discrimination on the basis of disability, unless the public entity can demonstrate that making the modifications would fundamentally alter the nature of the service, program, or activity.” 28 C.F.R. § 35.130(b)(7)(i) (2021). A plurality advised that courts evaluating fundamental alternation defenses must take into account financial and logistical limitations on a state’s capacity to provide integrated services to the disabled. *Olmstead v. L.C. ex rel. Zimring*, 527 U.S. 581, 603 (1999) (“The State’s responsibility, once it provides community-based treatment to qualified persons with disabilities, is not boundless.”). The plurality wrote that a state may consider both the resources of the state and “the needs of others with mental disabilities.” *Id.* at 607.

to benefits delivery, rather than piecemeal individual hand-holding, would depend upon the strength and prevalence of the causal link between poverty and cognitive deficits, as well as the pervasiveness of those deficits, even if previously unrecognized as disabilities. But such data is not necessary to engage in policy-making that accepts the limits of the known data and radically reconsiders how the state should interact with vulnerable populations.

2. *Poverty as Disabling Risks Overburdening a Fragile System*

Disability rights putatively guaranteeing the full participation of disabled persons in society are the result of relatively recent legislative victories.³⁶⁰ Another critique of the claims in this Article is that opening the legal category of disability to include persons in poverty puts these victories at risk by asking too much of the already fragile framework supplied by disability rights law. In their critique of Craig Konnoth's argument in favor of "medicalized civil rights," disability legal studies scholars Rabia Belt and Doron Dorfman argue that "[w]hile disability law looks seductive as written, its apparent generosity is belied by the reality in practice."³⁶¹ They predict that an expansion of "medical claiming" makes it "more likely . . . that medical-based benefits and rights will wither rather than increase."³⁶² This worry is made more pressing by the fact that, whereas the passage of disability rights laws received "broad but shallow" political engagement and support,³⁶³ Americans (and their politicians) have consistently strong feelings and assumptions about welfare and the "merely" poor.³⁶⁴ Thus, rather than improve public perception towards the poor, framing the poor as disabled may instead make the public more skeptical of disabled people. Professor Dorfman has extensively documented the widespread perception that accommodations for disability are benefits or perks—an understanding akin to social perceptions of welfare as "handouts"—and the sense that people are not deserving of such benefits drives public suspicion of disability programs.³⁶⁵ If disability

³⁶⁰ See 42 U.S.C. §§ 12101–12213 (Supp. V 1988); ADA of 1990 (ADA) tit. V, 42 U.S.C. §§ 12101–12213 (2012); see also 42 U.S.C. § 12101(a)(7) (Supp. V 1988) (finding that "individuals with disabilities are a discrete and insular minority"). The ADA Amendments Act of 2008 removed this language but kept the basic test for protected class membership. See ADA Amendments Act of 2008, Pub. L. No. 110-325, §§ 3–4, 122 Stat. 3553, 3554–55.

³⁶¹ Belt & Dorfman, *supra* note 33, at 181–82, 181 n.29 (describing and collecting scholarship documenting contemporary accounts of access to disability law's mandates). For example, applications for SSI and SSDI have decreased, possibly due to increases in difficulties "to apply, qualify for benefits, or appeal rejections." *Id.* at 182. "[A]ccommodations in reality are more about changes such as providing small-bore items like ergonomic chairs" rather than "broad-scale social reform." *Id.*

³⁶² *Id.* at 180–81.

³⁶³ Bagenstos, *supra* note 70, at 32 ("People across the political spectrum agreed that a civil rights law for disabled persons was a good idea, but they did not inquire deeply into what it entailed. To the contrary, most gave it little thought.")

³⁶⁴ See, e.g., GILENS, *supra* note 61, at 1; see also *supra* note 44.

³⁶⁵ Dorfman, *[Un]Usual Suspects*, *supra* note 24, at 557; Dorfman, *Fear of the Disability Con*, *supra* note 24, at 1051.

accommodations are perceived as prone to abuse, adding impoverished persons (who are already stereotyped and stigmatized as likely to defraud the welfare system) to a disability category may only worsen such perceptions and further weaken protections.

These are serious concerns, grounded in the deep cultural suspicions about the true motivations for other peoples' behavior and the reality that everyone—including policymakers—combines facts and evidence “with moral or emotional judgments based on their well-established beliefs and informational shortcuts.”³⁶⁶ The fragility of disability rights law reveals the limits of the formal law to change the cultural and political perceptions on which rights claims and adequate legal protections ultimately depend.³⁶⁷

This challenge is, once again, fundamentally an empirical question about whether the aforementioned science can be conveyed in a framework that supports a nuanced conception of disability. Policy theory gives some guidance as to how this might be possible.³⁶⁸ For example, the fact that scarcity induces attentional limitations in everyone at times should make the findings relatable and could help people understand the less familiar evidence about how poverty affects cognition. Incremental progress, sensitive to changes in political winds and cultural discourse, may permit the strengthening of public support for broader structural changes down the line. Such changes may require political messaging that conveys how both disability and poverty are conditions that affect most Americans at some point during their lifetimes.

3. *Poverty as Disabling May Compound Existing Stigmas*

Finally, both persons in poverty and persons with disabilities (and their advocates) may object to being lumped together because they would experience an accumulation of negative stigma already borne by the other group. Disability status carries negative stigma that may be rejected by people who are poor,³⁶⁹ a group that is already unjustly stereotyped as having

³⁶⁶ Paul Cairney, Kathryn Oliver & Adam Wellstead, *To Bridge the Divide Between Evidence and Policy: Reduce Ambiguity as Much as Uncertainty*, 76 PUB. ADMIN. REV. 399, 400 (2016).

³⁶⁷ Dorfman, *Fear of the Disability Con*, *supra* note 24, at 1084–85.

³⁶⁸ See, e.g., Cairney et al., *supra* note 366, at 399.

³⁶⁹ See, e.g., Eyer, *supra* note 71, at 607. As evidence that such stigma would be applied, for example, in *P. P. v. Compton Unified School District*, where plaintiffs alleged that children traumatized by growing up in violence and poverty were disabled within the meaning of the ADA, the school district's attorney argued in the press (and in court) that the application of the label of “disability” would itself be stigmatizing and harmful. Cory Turner, *Are Traumatized Students Disabled? A Debate Straight Outta Compton*, NPR (Aug. 20, 2015, 5:00 AM), <https://www.npr.org/sections/ed/2015/08/20/432885473/are-traumatized-students-disabled-a-debate-straight-outta-compton>. The school district's attorney stated, “A sweeping declaration would effectively tell these children that they have now been labeled as having a physical or mental handicap under federal law.” *Id.*

less mental capacity than those who are well-off.³⁷⁰ Dismantling the conceptual categorization between “poverty” and “disability” also risks psychological essentialization.³⁷¹ If the cognitive consequences of poverty are interpreted as a unique problem of the marginalized “poor,” it seems likely that the science reviewed above could simply “promote essentialistic representations of social groups and incite concurrent movements towards stigmatization and discrimination.”³⁷² Moreover, framing poverty as cognitively disabling may risk further marginalization of poor people by promoting paternalistic concerns about their ability to make their own decisions. For example, in the realm of “medicalizing civil rights,” Professors Rabia Belt and Doron Dorfman perceive the risk of “taking the expertise and decisionmaking capacity away from patients and disabled individuals and handing it over to other experts to make decisions for them.”³⁷³

One response to this very valid set of concerns is that, even if understanding poverty as disabling increases the stigmatization of the poor, this understanding may nevertheless carry instrumental benefits sufficient to offset the harms.³⁷⁴ That is, identifying as disabled may incur social and internal stigma, but may also grant someone access to needed resources that offset or compensate for status harms. Moreover, in some contexts, obtaining disability resources is seen as a marker of competence and thus may not lead to social stigma. Synthesizing ethnographic studies of impoverished people who established disability benefits based on mental illness, Helena Hansen and colleagues write: “In the context of poverty, using disability and illness to gain benefits can be interpreted at the street and family level as a marker of competence and social responsibility”³⁷⁵

³⁷⁰ See Nicholas Epley & Adam Waytz, *Mind Perception*, in 1 HANDBOOK OF SOCIAL PSYCHOLOGY 498 (Susan T. Fiske, Daniel T. Gilbert & Gardner Lindzey eds., 5th ed. 2010); Lasana T. Harris & Susan T. Fiske, *Dehumanizing the Lowest of the Low: Neuroimaging Responses to Extreme Out-Groups*, 17 PSYCH. SCI. 847 (2006).

³⁷¹ Cliodhna O’Connor & Helene Joffe, *How Has Neuroscience Affected Lay Understandings of Personhood? A Review of the Evidence*, 22 PUB. UNDERSTANDING SCI. 254, 262 (defining psychological essentialism “as the attribution of a group’s characteristics to an unalterable and causal ‘essence,’ which involves (i) establishing discrete, impermeable category boundaries; (ii) perceived homogeneity within the category; (iii) using the essence to explain and predict the group’s surface traits; and (iv) naturalization of the category”).

³⁷² *Id.*; see also Iris Berent & Melanie Platt, *Essentialist Biases Toward Psychiatric Disorders: Brain Disorders Are Presumed Innate*, 45 COGNITIVE SCI. e12970 (2021) (reporting experimental findings that lay participants are more likely to view psychiatric disorders as innate and immutable when provided with neuroscientific information supporting diagnosis than with a behavioral test); Paul-Emile, *supra* note 298, at 335 (recounting the racist history of “scientific” techniques of skull measurement “to produce evidence of the inferiority of people not deemed white”).

³⁷³ Belt & Dorfman, *supra* note 5, at 184.

³⁷⁴ Eyer, *supra* note 71, at 587–89; see also Teneille R. Brown, *Treating Addiction in the Clinic, Not the Courtroom: Using Neuroscience and Genetics to Abandon the Failed War on Drugs*, 54 IND. L. REV. 29, 30 (2021) (arguing that an integrated disease model reduces stigma that limits access to substance use disorder treatment).

³⁷⁵ Hansen et al., *supra* note 39, at 81.

Another response is that the harshest social consequences of stigma—being deemed morally undeserving—already exist for both those experiencing poverty and disability. Since the welfare reforms of 1996, mental health diagnoses became the major drivers of increases in SSI claims.³⁷⁶ In conjunction with this shift, there has been a rise in stigmatizing discourse about “cheaters,”³⁷⁷ “disability fraudsters,” and “malingerers,” “who have replaced welfare dependents as the latest manifestation of the recurring specter of the ‘undeserving poor.’”³⁷⁸ Some people who receive disability payments due to chronic illness internalize this stigmatization and consider themselves to be shirkers or malingerers for not being able to support themselves through work.³⁷⁹ Indeed, with respect to the concern that medicalizing rights claims (and, by analogy, “medicalizing poverty” as disability) risks giving rise to paternalistic policies that remove autonomy from individuals, that may already be the state of affairs that the marginalized experience in the “punitively paternalistic” neoliberal state.³⁸⁰ To the extent that bureaucratic institutions administering poverty and disability benefits are structurally reformed to reduce “sludge,” doing so may, instead, help eliminate some of the most stigmatizing experiences associated with poverty.

As with the issue of rhetorical impact, some of these questions are empirical—specifically, the question of how public perception of people in poverty and people with disabilities would change with widespread understanding that poverty causes brain and cognitive problems. Brain-focused rhetoric may transgress a general difference in stigmatization of psychological versus physical illness, though the dichotomy is also modified by the degree to which an ailment is perceived as stable or controllable.³⁸¹ Indeed, some research has shown that attributing mental

³⁷⁶ *Id.* at 76–77.

³⁷⁷ *Id.* at 82.

³⁷⁸ Whittle et al., *supra* note 17, at 182 (citing Hansen et al., *supra* note 39, at 82).

³⁷⁹ *Id.* at 186.

³⁸⁰ *Id.* at 187. In synthesizing the ethnographic findings of the experiences of persons with chronic disabling illness in the San Francisco Bay Area, Whittle et al. write:

This lived experience of convoluted, inflexible, and obstructive bureaucracy in social institutions, perceived to be deliberately penalizing, is consistent with previously described neoliberal trends in US policy-making and statecraft enacted over the past three decades. As cuts and restrictive reforms to social institutions rolled forward, including those to the old welfare and [General Assistance] programs, remaining social institutions have realigned to adopt more penalizing and restrictive techniques of governance. This has led to the paradoxical state of affairs whereby for those impoverished American citizens dependent on government social institutions, life in the neoliberal state becomes, rather than *laissez-faire* and free from government interference, punitively paternalistic and overregulated.

Id. (internal citations omitted).

³⁸¹ See Sierra B. Cronan, Karen D. Key & Allison A. Vaughn, *Beyond the Dichotomy: Modernizing Stigma Categorization*, 1 STIGMA & HEALTH 225, 225 (2016).

illness to genetic and biological factors increases stigma because it is perceived as not treatable.³⁸²

The data reviewed above, however, suggest a framework that may not be as subject to deterministic conclusions. Someone who is poor may be extremely cognitively capable, but not able to function at the level of their innate potential because of their poverty. That data may also make the cognitive experiences of poverty relatable and the subject of hope rather than despair. As the researchers who developed scarcity theory emphasize, “[t]he poor . . . are less capable not because of inherent traits, but because the very context of poverty imposes load and impedes cognitive capacity. The findings, in other words, are not about poor people, but about any people who find themselves poor.”³⁸³ In other words, the findings reviewed above may help dismantle the marginalization of “the poor” by connecting their condition to the universal experience of limited attentional bandwidth under cognitive load.

B. *Risks*

Finally, no discussion about bringing brain science into large scale policy questions should avoid considering the significant risks inherent to such a project. These risks stem from the potential to (1) misinterpret the science and (2) blur the descriptive (which science can provide) and the normative and political (which science cannot provide). Brain and behavioral science, like all science, must be thoughtfully deployed in society with ethical, social, and legal guardrails. Better understanding of how and why humans behave the way they do has the potential to improve our society and our laws, but it does not come with that guarantee.

1. *Improper G2i: Individualization of Collective Data*

The data reviewed in Part II is not diagnostic. It evaluates differences between groups of people, rather than differences at the level of individuals. We cannot infer from a given individual’s socioeconomic status or income level how they are cognitively functioning. Nevertheless, using scientific data to challenge assumptions about the behavior of individuals *within* certain groups incurs the risk that decision-makers will make unwarranted group-to-individual (G2i) inferences.³⁸⁴ This drastic yet common misinterpretation of the science

³⁸² See, e.g., Nick Haslam & Erlend P. Kvaale, *Biogenetic Explanations of Mental Disorder: The Mixed-Blessings Model*, 24 CURRENT DIRECTIONS PSYCH. SCI. 399, 399 (2015).

³⁸³ Mani et al., *supra* note 84, at 980.

³⁸⁴ The acronym comes from David L. Faigman, John Monahan & Christopher Slobogin, *Group to Individual (G2i) Inference in Scientific Expert Testimony*, 81 U. CHI. L. REV. 417, 419–20 (2014). G2i is a problem for all kinds of scientific evidence, including brain science in the courtroom. See Carl E. Fisher, David L. Faigman & Paul S. Appelbaum, *Toward a Jurisprudence of Psychiatric Evidence: Examining the Challenges of Reasoning from Group Data in Psychiatry to Individual Decisions in the Law*, 69 U. MIA. L. REV. 685 (2015); Teneille Brown & Emily Murphy, *Through a Scanner Darkly: Functional*

by policymakers could result in policy frameworks that continue to blame or stigmatize poor people, as well as frameworks that continue to place the onus for change on individuals.³⁸⁵

One case in which individualized remedies have been inappropriately recommended on the basis of general data involves interventions aimed at parenting practices in low-income communities. Martha Farah points out that “neuroscience-inspired policy literature has much to say about parenting practices in low SES communities, and parent training is a frequent policy recommendation,” while ignoring the contexts in which parents are raising their children.³⁸⁶ Other individual-level “fixes” proposed by researchers include “psychotherapy-like intervention[]” programs with people at food banks intended to improve their planning and delay gratification skills to reverse the effects of low income on food insecurity.³⁸⁷ At the extreme end of the spectrum of the risk of misguided interventions, policymakers might mistakenly conclude that all poor people are disabled and thus unfit or incapacitated—even though disability is not synonymous with legal incapacity—threatening parental rights and other liberties. Such difficult legal decisions must be made on a case-by-case basis and are not properly justified by group-based, probabilistic data.

What I am calling “improper G2i” is not an inevitability, but it is a risk incurred when bringing complex science into a policy-making world that needs to tell simple and concrete stories for political buy-in. It is also a risk particular to any science about human behavior, which runs headlong into folk psychology that prefers attributing blame and responsibility only to individual agents rather than addressing complex structural problems. How can this risk be mitigated? Careful translation of the science, including its limitations and residual uncertainties—as has been attempted here—is a necessary, but likely insufficient, mitigation strategy.

2. *Applying Science to Systems of Values*

Substituting a discourse of science for a discourse of justice is a tempting elision. However, doing so threatens both the proper development of science and the co-option of the science to justify immoral ends, such as segregation, unequal opportunity, and the restriction of privileges and rights. For

Neuroimaging as Evidence of Criminal Defendant’s Past Mental States, 62 STAN. L. REV. 1119 (2010). This G2i risk is not one of confusing legislative facts for adjudicative facts, but of confusing legislative facts used in support of structural policy changes for legislative facts guiding how the state’s administrative apparatus should intervene in changing individual behavior within the existing system.

³⁸⁵ See Farah, *supra* note 1, at 435.

³⁸⁶ *Id.*

³⁸⁷ Haushofer & Fehr, *supra* note 139, at 866; Leonard H. Epstein, et al., *No Food for Thought: Moderating Effects of Delay Discounting and Future Time Perspective on the Relation Between Income and Food Insecurity*, 100 AM. J. CLINICAL NUTRITION 884, 884, 888 (2014) (suggesting that training programs to help hungry people learn “future orientation,” as in long-term planning and delay gratification may help reverse effects of low income on food insecurity).

example, little is known about the brain science of recovery from childhood adversity (including poverty) or resilience in the face of financial and socioeconomic challenges. What if science were to learn how to predict which individuals have the capacity to gain cognitive capacities, and which do not? One might, on this basis, conclude that our education system could be made “more efficient” by a policy of only giving resources to those who will “improve,” while largely ignoring the rest. Initially, this seems like a problem with the science, but it is fundamentally a problem that follows from an indefensible normative view to which science cannot speak—in this case, a view that fails to recognize the importance of providing dignity and opportunity to all individuals in our society.

The story of the science of implicit racial bias in antidiscrimination law is instructive. Sam Bagenstos has documented how the science of implicit bias seemed to provide a new approach to antidiscrimination remedies after a period of “increasing racial conservatism” from the 1970s through the 1990s.³⁸⁸ He argues, however, that even though policy makers and society started taking implicit bias seriously—and even setting aside the scientific controversy over the research—“it has failed in its most important political project” of “depolicitiz[ing] and depersonaliz[ing] society’s understanding of discrimination.”³⁸⁹ The depoliticization of discrimination involved substituting “a discourse of science for [a] discourse of justice” by focusing on the “realism” that racial discrimination persisted even after the enactment of civil rights laws.³⁹⁰ The depersonalization of discrimination offered an explanation for inequality that did not involve labeling individuals as racist. These strategies failed, since the original political battle lines never went away. Worse yet, the focus on the scientific findings of implicit bias “has given racial conservatives the opportunity to frame their opposition in scientific terms—as questioning the reliability or validity of particular studies or tools—and thus allowed them to draw attention away from the political underpinnings of their arguments.”³⁹¹

The reason why the concept of implicit bias has become prominent in public discourse is not (just) because we are interested in how our brains work. The concept has become prominent because it undergirds an argument for policy

³⁸⁸ Samuel R. Bagenstos, *Implicit Bias’s Failure*, 39 BERKELEY J. EMP. & LAB. L. 37, 40 (2018); see also Linda Hamilton Krieger & Susan T. Fiske, *Behavioral Realism in Employment Discrimination Law: Implicit Bias and Disparate Treatment*, 94 CALIF. L. REV. 997, 1027–30, 1032, 1036, 1042 (2006); Christine Jolls & Cass R. Sunstein, *The Law of Implicit Bias*, 94 CALIF. L. REV. 969, 978–88 (2006); Jerry Kang & Mahzarin R. Banaji, *Fair Measures: A Behavioral Realist Revision of “Affirmative Action”*, 94 CALIF. L. REV. 1063, 1064 (2006).

³⁸⁹ Bagenstos, *supra* note 388, at 39–40.

³⁹⁰ *Id.* at 40–41.

³⁹¹ *Id.* at 42; see also Samuel R. Bagenstos, *Implicit Bias, “Science,” and Antidiscrimination Law*, 1 HARV. L. & POL’Y REV. 477, 479 (2007).

interventions to overcome racial inequality—policy interventions that have been exceedingly controversial. Advocates may wish to focus debate on what they understand to be scientific facts, but it is to be expected that those on the other side will attempt to shift the focus to the policy agenda that those facts are marshaled to support.

If anything, the turn to scientific discourse presents an opportunity for racial conservatives. Live by the psychological study, die by the psychological study.³⁹²

Attempting to settle controversial policy disputes by appealing to recent scientific developments ensures that weaknesses in the science—particularly in the tools of measurement, which are different from the underlying phenomena—can be weaponized to undermine support for the political project that the science is being used to build.

While issues of poverty and disability, like racial issues, are highly politicized, one might argue that there are important differences between the two situations that will make the interpretation of the “neuroscience of poverty” less fraught. The science of implicit bias locates the mechanism of interpersonal discrimination within the individual. Since conservatives tend to resist being labeled with any kind of racial bias at all, the depersonalization element of the political project was bound to fail. The science of cognition in poverty operates differently. It locates the operative mechanism within the poor person themselves and it identifies the mechanism as a product of structural, environmental, or contextual influences, rather than interpersonal interactions. These factors may make the interpretation of the science less vulnerable to conservative co-option and critique, such that the project of depoliticizing and depersonalizing understanding of poverty on the basis of recent brain science has a more realistic chance at success. Additionally, when marginalized groups consider structural factors contributing to discrimination against them, they tend to seek solidarity with other marginalized groups.³⁹³ That is, it is possible that the science that permits understanding of poverty as disabling could potentially motivate a more unified political coalition among marginalized groups seeking structural reforms to benefit all.

Fundamentally, however, Professor Bagenstos argues that “framing these issues in scientific terms obscures the deeply contested normative issues that we are actually fighting about.”³⁹⁴ While he is right to warn about the use of science to obscure our normative disagreements, as long as the

³⁹² Bagenstos, *supra* note 388, at 44.

³⁹³ Maureen A. Craig, Julian M. Rucker & Riana M. Brown, Structural Solidarity: Lay Theories of Discrimination and Coalitional Attitudes Among Stigmatized Groups 8 (Oct. 8, 2020) (unpublished manuscript) (available at <https://psyarxiv.com/u9sf6>).

³⁹⁴ Bagenstos, *supra* note 388, at 47–48.

terms of the debate are clear and the nuances and boundaries of the science are understood, there is no inherent problem in marshalling scientific support in favor of a normative position. Any normative policy position depends upon an array of underlying empirical claims—claims which science can appropriately inform and justify. Moreover, for complex problems, it is likely the best option available to treat a given normative position as a hypothesis to be tested in the realm of real-world policy solutions. That is fundamentally all that a complex, democratic society can do, and it is entirely consistent with responsible translation of science to society.

CONCLUSION

Brain and behavioral science are revealing that poverty causes problems in development and cognition. These problems are invisible, subtle, and hard to detect, but may cause significant impairment in attention, decision-making, planning, and judgment that add to the challenges of life in poverty. For some people living in poverty, the impairments may be disabling. Understanding the neural signatures of poverty challenges the legal and social categories of “poverty” and “disability,” and especially the distinctions in moral condemnation that are manifest in social safety net programs.

Proof that poverty affects brain development and cognitive functioning matters for law and for policy because it challenges certain moral, political, and cultural assumptions about why people become or stay poor, namely, the degree to which a person’s relative failure in the market economy is for a “socially acceptable reason.”³⁹⁵ Whether or not a reason is socially acceptable goes to the heart of the folk psychological concept of personal fault and moral judgments about the same. Evidence is mounting in support of the idea that poverty may be disabling. It is time to consider the implications of understanding the effects of poverty on the brain, as well as how much society might gain by investing in structural interventions to address those effects.

³⁹⁵ Diller, *supra* note 7, at 372–73.

