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Why Kindergarten Is Too Late: The Need for Early Childhood Remedies in School Finance Litigation

Kevin Woodson

I. INTRODUCTION

In 2006, Jim Ryan, then a law professor, now dean of Harvard University's School of Education, published *A Constitutional Right to Preschool*,¹ a seminal article that argued that courts should require states to fund public preschools as a means of abiding by their constitutional obligations to provide all children adequate educational opportunities.² Though very few courts have ever imposed such a requirement,³ and all but one of these rulings have been eliminated on appeal,⁴ Ryan noted the political popularity of universal preschool and a growing trend among states to provide free pre-kindergarten as grounds for optimism that courts might be more open to ordering preschool remedies in future litigation.⁵

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1. James E. Ryan, *A Constitutional Right to Preschool*, 94 CAL. L. REV. 49 (2006); see also James E. Ryan, HARV. GRADUATE SCH. EDUC., <https://www.gse.harvard.edu/faculty/james-ryan> [<https://perma.cc/K7M6-NZ4S>].

2. See *id.* at 75-81, 91. For an overview of educational adequacy litigation, see *infra* Part III.

3. Ryan, *supra* note 1, at 52 (explaining that trial courts in New Jersey, North Carolina, Arkansas, and Massachusetts ordered states to provide free pre-kindergarten programs).

4. *Id.* (noting that high courts in Arkansas, Massachusetts, and North Carolina all overturned lower court orders requiring public preschool).

5. See *id.* at 50-52.

A decade later, the judicial embrace of early childhood education that Ryan envisioned is no closer to coming to fruition. In the past ten years, only two additional state high courts have ordered state legislatures to provide free early childhood education to remedy constitutionally inadequate educational conditions.⁶ Instead, courts—and legislatures—have mainly continued to address education clause violations by allocating additional funding to elementary and secondary schools in low-income districts.⁷ As a result of this inattention to early childhood remedies,⁸ the legal discourse on inadequate opportunity and educational inequality by and large continues to overlook the formative periods of disadvantaged children's lives that have proven most harmful to their educational prospects—the very areas where lawmakers and policymakers might be able to make the most difference by redirecting their attention and resources. Although many states have expanded their provision of public pre-kindergarten in recent years in the absence of

6. See *Abbeville Cty. Sch. Dist. v. State*, 767 S.E.2d 157, 180 (S.C. 2014); *Hoke Cty. Bd. of Educ. v. State*, 731 S.E.2d 691, 697 (N.C. Ct. App. 2012).

7. See *infra* notes 89-120 and accompanying text.

8. Early childhood education has been similarly neglected in much of the recent legal scholarship on education rights and school finance litigation. Though dozens of law review articles addressing education adequacy litigation have been published over the past ten years, very few have touched upon early childhood education in any depth. *But see* Natalie Gomez-Velez, *Can Universal Pre-K Overcome Extreme Race and Income Segregation to Reach New York's Neediest Children? The Importance of Legal Infrastructure and the Limits of the Law*, 63 CLEV. ST. L. REV. 319 (2015) (examining universal pre-kindergarten programs in New York and the impact of those programs on inequality); Erin E. Lawson, Note, *Fulfilling the Promise of Education to South Carolina's At-Risk Children: A New Pre-School Initiative in South Carolina*, 58 S.C. L. REV. 1025 (2007) (evaluating proposed legislation in South Carolina that would establish a pre-kindergarten program for the state's four-year-old children). School finance litigator Michael Rebell has embraced early childhood education programs as a component of what he theorizes as a right to comprehensive education. See Michael A. Rebell, *Poverty, "Meaningful" Educational Opportunity, and the Necessary Role of the Courts*, 85 N.C. L. REV. 1467, 1476 (2007).

Legal scholarship on the topic has instead focused more often on broader, theoretical issues and implications. See, e.g., Joshua E. Weishart, *Reconstituting the Right to Education*, 67 ALA. L. REV. 915 (2016) (examining the right to education in terms of equality of opportunity and adequacy); Scott R. Bauries, *A Common Law Constitutionalism for the Right to Education*, 48 GA. L. REV. 949 (2014) (articulating a new individual-rights-based approach to school finance litigation); Joshua E. Weishart, *Transcending Equality Versus Adequacy*, 66 STAN. L. REV. 477 (2014) (reconceptualizing the relationship between educational equality and adequacy).

judicial mandates,⁹ poor children still commonly lack access to high-quality early childhood education.¹⁰ In the face of these disparities, glaring achievement gaps arise between disadvantaged children and their more affluent counterparts during their earliest years, and persist through adulthood.¹¹

Research demonstrating both the long-term significance of early childhood disadvantages¹² and the effectiveness of early childhood interventions in counteracting them¹³ has made increasingly clear the dire consequences of courts' failures to address the developmental and educational needs of poor children before they enter kindergarten. Though far removed from the traditional concerns of school finance litigation, the disparities and deficits that emerge in this early period undermine the effectiveness of state efforts to provide disadvantaged children access to meaningful educational opportunities later in childhood. Building upon this observation, this Article aims to resurrect, and reinvigorate, Ryan's argument

9. See *infra* notes 155-197 and accompanying text; see also Daphna Bassok et al., *Socioeconomic Gaps in Early Childhood Experiences: 1998 to 2010*, 2 AERA OPEN 1, 2 (2016) ("[D]espite heightened public investment in public preschool, low-income children in 2010 were less likely than their counterparts in 1998 to attend formal child care or preschool in the year before kindergarten and more likely to be cared for solely by their parents.").

10. See Bassok et al., *supra* note 9; Katherine Magnuson & Jane Waldfogel, *Trends in Income-Related Gaps in Enrollment in Early Childhood Education: 1968 to 2013*, 2 AERA OPEN 1, 5 (2016) (noting a gap in the preschool attendance rates of high- and low-income children of fifteen percent in 2013).

11. See Martha J. Bailey & Susan M. Dynarski, *Inequality in Postsecondary Education*, in *WHITHER OPPORTUNITY?: RISING INEQUALITY, SCHOOLS, AND CHILDREN'S LIFE CHANCES* 117, 124 (Greg J. Duncan & Richard J. Murnane eds., 2011) (finding substantial and growing gaps in high school graduation and college completion between students from poor families and their more affluent peers); Sean F. Reardon, *The Widening Academic Achievement Gap Between the Rich and the Poor: New Evidence and Possible Explanations*, in *WHITHER OPPORTUNITY?: RISING INEQUALITY, SCHOOLS, AND CHILDREN'S LIFE CHANCES* 91, 91 (Greg J. Duncan & Richard J. Murnane eds., 2011) (finding that the income achievement gap has been growing for at least fifty years and more than thirty percent between the 1976 and 2001 birth cohorts).

12. See *infra* Part II; see also Douglas Almond & Janet Currie, *Human Capital Development Before Age Five 2* (Nat'l Bureau of Econ. Research, Working Paper No. 15827, 2010) (explaining that while there were no articles on the enduring human capital effects of childhood developmental environments in top economic journals in 2000, there have been five or six per year since 2005), <http://www.nber.org/papers/w15827> [<https://perma.cc/H3G5-5GMG>].

13. See *infra* Part II.

in favor of preschool as an essential remedy in education adequacy litigation.¹⁴ But whereas Ryan—based in part on his reading of the existing social science literature—focused specifically on adding one additional year of pre-kindergarten schooling, this Article argues for an even more robust expansion of early childhood-focused efforts. Relying upon a mounting body of research on the importance of children's home literacy environments and development experiences during infancy and toddlerhood—as well as empirical findings from a number of controlled field experiments—this Article also argues that states should implement and fund programs to provide developmental support for economically disadvantaged children in the first years of life.

This Article proceeds in three parts. Part II draws from the voluminous scientific and social scientific research on early childhood—particularly the burgeoning body of recent studies published in the past decade—to demonstrate the importance of the first three years of life as the site of emergent inequality that can limit the achievement of disadvantaged children for the rest of their lives. Part III provides a brief overview of educational adequacy litigation and describes the failure of the courts to address these critically important early childhood deficits and disparities. Part IV argues that courts and legislatures should right the course of school finance litigation by incorporating high-quality early childhood programs as remedies for constitutionally defective educational systems. This Part offers a two-pronged proposal. The first prong calls for states to redouble their efforts to provide high-quality preschool for disadvantaged children in order to mitigate the deficits and

14. Though Ryan also addresses other causes of action, including equal protection based arguments as possible bases for a constitutional right to preschool, this Article focuses solely on educational adequacy litigation for two primary reasons. First, school finance plaintiffs have been far more successful in adequacy-based lawsuits, which appear to be a far more fruitful vehicle for social change and educational reform. Second, and most importantly, equity claims for the early childhood programs being sought in this Article will likely fail, as most affluent school districts do not offer such programs or services either. It should also be noted that the existing research suggests that these programs add far more value and are therefore more cost-effective when targeted to the most disadvantaged children. See *infra* Part IV.C.2.

disparities of early life as soon as feasibly possible. The second prong calls for courts to direct legislatures to devote greater resources toward infants, toddlers, and their parents, to attempt to reduce these deficits before they develop. To support these proposals, this Part offers evidence from an extensive and growing body of research demonstrating the value and effectiveness of early childhood programs across the country.

II. THE EDUCATIONAL RELEVANCE OF EARLY CHILDHOOD

The millions of children who enter kindergarten each year begin their formal educational careers with grossly unequal prospects of success. Socioeconomically disadvantaged students arrive more poorly prepared and therefore less ready than their affluent counterparts to avail themselves of the educational opportunities provided by their schools.¹⁵ The magnitude of this disparity is alarming. A 2015 study published in the journal *Pediatrics* compared the reading and math skills of entering kindergarteners across five quintiles of socioeconomic disadvantage and found that students' scores decreased consistently and significantly across each quintile.¹⁶ While the average reading scores for the poorest students were in the thirty-fourth percentile, the average scores of the most privileged students were in the sixty-seventh percentile.¹⁷ The results were just as stark with respect to math, where average scores increased across quintiles from the thirty-third to the seventieth percentiles.¹⁸ Other writings, including the recent

15. See Bassok et al., *supra* note 9, at 2 (explaining that “[less than] 50% of poor children in the United States entered kindergarten ‘school ready,’ as reflected by a composite measure including direct assessments of early literacy and math knowledge, teacher-reported measures of behavior, and parent-reported measures of health.”).

16. See Kandyce Larson et al., *Cognitive Ability at Kindergarten Entry and Socioeconomic Status*, 135 *PEDIATRICS* e441, e442-43 (2015).

17. *Id.*

18. *Id.* at e443; see also Greg J. Duncan & Katherine Magnuson, *Investing in Preschool Programs*, 27 *J. ECON. PERSP.* 109, 109 (2013) (“At the beginning of kindergarten, the math and reading achievement gaps between children in the bottom and top income quintiles amount to more than a full standard deviation.”); Edward C. Melhuish et al., *Effects of the Home Learning Environment and Preschool Center Experience upon Literacy and Numeracy Development in Early Primary School*, 64 *J. SOC. ISSUES* 95, 110

best-seller *Thirty Million Words: Building A Child's Brain*, have observed profound socioeconomic disparities in early childhood vocabularies, a critical building block for later literacy and reading skills.¹⁹

Though commonly understood as unequal “starting points” of children’s educational careers, these class-based disparities actually reflect the accumulated weight of years of unequal access to learning and enrichment beginning well before children reach their first birthdays.²⁰ To explicate the dynamics that generate these early disparities, and explain their impact on students’ educational trajectories, this Part reviews the growing body of research on the educational significance of the first few years of life. This research will help make clear the enormous social costs of the current reluctance of courts and legislatures to provide disadvantaged children access to the necessary early childhood services.

A. Critical Period of Foundational Development

*“Learning begins at birth.”*²¹

Although most American children do not see the inside of a school classroom until they are four or five years old, their true educational careers begin much earlier. As the American Academy of Pediatrics explains in their policy statement on early childhood education, “All of a child’s early experiences, whether at home, in child care, or in other preschool settings, are educational.”²² These early experiences can have profound,

(2008) (discussing the correlation between cognitive and behavioral deficits at age five with exposure to poverty).

19. DANA SUSKIND ET AL., *THIRTY MILLION WORDS: BUILDING A CHILD'S BRAIN* 35, 47-49 (2015).

20. See Noreen Yazejian et al., *High-Quality Early Education: Age of Entry and Time in Care Differences in Student Outcomes for English-Only and Dual Language Learners*, 32 *EARLY CHILDHOOD RES. Q.* 23, 23 (2015).

21. Pia Rebello Britto et al., *Maternal Reading and Teaching Patterns: Associations with School Readiness in Low-Income African American Families*, 41 *READING RES. Q.* 68, 68 (2006).

22. Comm. on Early Childhood, Adoption & Dependent Care, *Policy Statement: Quality Early Education and Child Care from Birth to Kindergarten*, 115 *PEDIATRICS* 187, 187 (2005); see also Roel van Steensel, *Relations Between Socio-Cultural Factors, the Home Literacy Environment and Children's Literacy Development in the First Years of*

lasting effects, altering the course of children's lifelong cognitive and social development.²³

The learning and knowledge acquisition that children undergo in these early years vary according to the quality of their home environments, particularly the support and attention that they receive from adult caregivers.²⁴ Generally speaking, children who are raised in stimulating environments fare far better than those who do not.²⁵ Responsiveness, the extent to which parents and other caregivers promptly and appropriately react to children's overtures,²⁶ strongly influences child

Primary Education, 29 J. RES. READING 367, 367 (2006) (explaining that "most children become acquainted with the nature and functions of written language long before their first day in school, through observing and participating in literacy activities in their homes.").

23. See Ctr. on the Developing Child, *Deep Dives: Gene-Environment Interactions*, HARV. U., <http://developingchild.harvard.edu/science/deep-dives/gene-environment-interaction/> [https://perma.cc/EK4B-D6CF] ("The brain is particularly responsive to experiences and environments during early development."). The human brain does, however, continue to undergo significant growth and development during late childhood. See generally Elizabeth R. Sowell et al., *Development of Cortical and Subcortical Brain Structures in Childhood and Adolescence: A Structural MRI Study*, 44 DEVELOPMENTAL MED. & CHILD NEUROLOGY 4 (2002) (finding that the brains of children underwent increases in supratentorial cranial capacity and cerebral white matter between childhood and adolescence).

24. See Nadine Forget-Dubois et al., *Early Child Language Mediates the Relation Between Home Environment and School Readiness*, 80 CHILD DEV. 736, 736 (2009) (listing "attachment security and continuing sensitive care, verbal stimulation, access to educational material in the home, and specific parental practices such as reading with the child" as determinants of school readiness); see also Jay Belsky & R. M. Pasco Fearon, *Early Attachment Security, Subsequent Maternal Sensitivity, and Later Child Development: Does Continuity in Development Depend upon Continuity of Caregiving?*, 4 ATTACHMENT & HUM. DEV. 361, 381 (2002).

25. See Kathy Hirsh-Pasek & Margaret Burchinal, *Mother and Caregiver Sensitivity Over Time: Predicting Language and Academic Outcomes with Variable- and Person-Centered Approaches*, 52 MERRILL-PALMER Q. 449, 450 (2006) ("Stimulating and responsive parenting in early childhood is one of the strongest predictors of children's later language, cognitive, and social skills."); see also Robert H. Bradley et al., *The Home Environments of Children in the United States Part II: Relations with Behavioral Development Through Age Thirteen*, 72 CHILD DEV. 1868, 1879 (2001) (finding an association with learning stimulation and "early motor and social development, language competence, and achievement"); *id.* at 1880 (finding that "learning stimulation was associated with size of vocabulary" and also with "achievement scores among kindergarten aged children").

26. Marc H. Bornstein et al., *First Words in the Second Year: Continuity, Stability, and Models of Concurrent and Predictive Correspondence in Vocabulary and Verbal Responsiveness Across Age and Context*, 22 INFANT BEHAV. & DEV. 65, 66-67 (1999).

development.²⁷ Parental warmth, affection, and sensitivity are associated with more advanced early cognitive skills and greater school readiness.²⁸ The verbal activity of mothers during maternal-infant interactions can powerfully shape the language development of their infants. Young children who are read to more regularly already demonstrate better-developed language skills by the time they are three years old.²⁹ Even slight variations in the styles of speech and complexity of language that parents use in these interactions may generate disparities in children's literary development; the existing research suggests that more interactive and conversational approaches to book reading on the part of parents may generate superior vocabulary development in their children.³⁰ Early reading activity may produce cumulative learning advantages by leading to greater future reading activity and language development.³¹

The quality of early caregiving practices and home literary environments may even influence important, lasting chemical changes that take place in children's brains during early

27. *Id.* at 81 (finding that maternal verbal responsiveness was even more highly correlated than maternal vocabulary in predicting child vocabulary); see also Bradley et al., *supra* note 25, at 1880 ("[P]arental responsiveness showed a relation to early motor and social competence."); Melhuish et al., *supra* note 18, at 97 (explaining that "responsiveness[] and warmth in interactions" are associated with improved developmental outcomes); Catherine S. Tamis-LeMonda & Marc H. Bornstein, *Maternal Responsiveness and Early Language Acquisition*, 29 *ADVANCES IN CHILD DEV. & BEHAV.* 89, 99, 103 (2002) (finding that measures of maternal responsiveness in early periods predicted subsequent language acquisition outcomes in children in a longitudinal study).

28. Hirsh-Pasek & Burchinal, *supra* note 25, at 450-51; see also Annie Bernier et al., *From External Regulation to Self-Regulation: Early Parenting Precursors of Young Children's Executive Functioning*, 81 *CHILD DEV.* 326, 334 (2010).

29. Helen Raikes et al., *Mother-Child Bookreading in Low-Income Families: Correlates and Outcomes During the First Three Years of Life*, 77 *CHILD DEV.* 924 (2006) (finding an association between daily maternal reading during early childhood and later vocabulary and cognitive skills); *id.* at 943 ("A pattern of daily reading over three data points significantly related to child language and cognitive outcomes at 36 months."). Vocabulary development is a "key marker in children's language development" and "predicts success in learning to read." Bornstein et al., *supra* note 26, at 66.

30. Britto et al., *supra* note 21, at 81 ("Children's vocabulary appears to be associated with a more interactive maternal book-reading pattern (encouraging the child to participate in the activity, asking more questions, and extending children's knowledge beyond the pages of the book)"); see also Melhuish et al., *supra* note 18, at 97.

31. Raikes et al., *supra* note 29, at 943. Raikes and her colleagues explained that their study "underscores the importance of targeting preliteracy interventions for low-income English-speaking children much earlier than previous research has suggested." *Id.*

childhood. During the first few years of a child's life, the human brain undergoes rapid physical growth,³² and is acutely sensitive to external environmental conditions—so much so that children's social environment can actually alter the chemical structure and functioning of their brains.³³ Children who grow up with adults who are responsive to their communications and needs retain greater numbers of synapses,³⁴ which in turn increases their learning capabilities.³⁵ Conversely, children who do not receive sufficiently responsive and stimulating care may lose more neurons and suffer greater exposure to harmful stress

32. Their brains grow substantially in the first five years of life, creating an estimated 1,000 trillion synapses and reaching approximately 85% of their full adult size. See S. EARLY CHILDHOOD ASS'N, *BRAIN RESEARCH AND ITS IMPLICATIONS FOR EARLY CHILDHOOD PROGRAMS* 1 (2001); Rhoshel K. Lenroot & Jay N. Giedd, *Brain Development in Children and Adolescents: Insights from Anatomical Magnetic Resonance Imaging*, 30 *NEUROSCIENCE & BIOBEHAVIORAL REV.* 718, 720 (2006) (stating that the human brain grows to approximately eighty percent of its adult weight by age two and ninety percent by age five); Joan Stiles & Terry L. Jernigan, *The Basics of Brain Development*, 20 *NEUROPSYCHOL REV.* 327, 328 (2010) (stating that the brain grows four-fold in size during children's preschool years).

33. This occurs through a process that scientists have termed epigenetic modification, in which children's early experiences and interactions with caregivers literally change the chemistry of their brains in ways that can alter the expression of certain genes. See Ctr. on the Developing Child, *supra* note 23; URBAN CHILD INST., *DATA BOOK 2013: THE STATE OF CHILDREN IN MEMPHIS & SHELBY COUNTY* (2013), <http://www.urbanchildinstitute.org/resources/publications/data-book-2013/brain-development-conception-to-age-3> [<https://perma.cc/6WME-A5WN>] (explaining that “[m]any environmental factors and experiences result in chemical ‘marks’ on certain parts of genes, and these epigenetic changes can influence the activity, or ‘expression’, of the gene.”). See generally NAT'L SCI. COUNCIL ON THE DEVELOPING CHILD, *THE SCIENCE OF EARLY CHILDHOOD DEVELOPMENT: CLOSING THE GAP BETWEEN WHAT WE KNOW AND WHAT WE DO* 1 (2000) (explaining that an “explosion of research in neurobiology that clarifies the extent to which the interaction between genetics and early experience literally shapes brain architecture.”).

34. See Ctr. of the Developing Child, *Key Concepts: Serve and Return*, HARV. U., <http://developingchild.harvard.edu/science/key-concepts/serve-and-return/> [<https://perma.cc/G8HU-4RQB>] (describing these interactions as “serve and return interactions”); *Brain Development and Early Learning*, 1 WIS. COUNCIL ON CHILD. & FAM. 1, 1 (2007) (“[T]he quality of an infant's relationship with his or her primary caregivers has a decisive impact on the architecture of the brain.”).

35. S. EARLY CHILDHOOD ASS'N, *supra* note 32, at 2 (“The larger the number of interconnections, the faster and more meaningful learning will be.”); see *id.* at 1 (“A child's experiences forge the connections of neurons The quality of experiences and relationships in the first three years of life has a deep and lasting impact on how the brain develops.”).

hormones,³⁶ potentially contributing to lifelong differences in learning aptitudes and educational outcomes.

These early developmental processes determine children's school readiness, their ability to successfully transition into their formal education careers.³⁷ School readiness is a broad construct consisting of a number of distinct components including "[p]hysical [w]ell-[b]eing and [m]otor [d]evelopment,"³⁸ "[s]ocial and [e]motional [d]evelopment,"³⁹ "[a]pproaches to [l]earning,"⁴⁰ "[l]anguage [d]evelopment,"⁴¹

36. *Id.*

37. See U.S. Dep't of Health & Human Servs., *Head Start Approach to School Readiness – Overview*, HEAD START, <https://eclkc.ohs.acf.hhs.gov/hslc/hs/sr/approach> [<https://perma.cc/5GGK-MA87>] (stating that school readiness is a composite concept that encompasses all of the "skills, knowledge, and attitudes necessary for success in school."). There has been a proliferation of definitions for school readiness over the past twenty years. See, e.g., *What Do We Mean By School Readiness?*, URB. CHILD INST. (Sept. 16, 2011), <http://www.urbanchildinstitute.org/articles/research-to-policy/research/what-do-we-mean-by-school-readiness> [<https://perma.cc/8Y77-4Z5L>] (listing identifying language and literacy skills, thinking skills (such as cause-and-effect and object permanence), self-control, and self-confidence as important components of school readiness); U.S. Dep't of Health & Human Servs., *supra* note 37 ("Physical, cognitive, social, and emotional development are all essential ingredients of school readiness."); MINN. DEP'T OF EDUC., MINNESOTA SCHOOL READINESS STUDY: DEVELOPMENTAL ASSESSMENT AT KINDERGARTEN ENTRANCE: FALL 2009 (2010) ("'[S]chool readiness' is defined as the skills, knowledge, behaviors and accomplishments that children know and can do as they enter kindergarten in the following areas of child development: social and emotional development; approaches to learning; language and literacy development; creativity and the arts; cognition and general knowledge; and physical well-being and motor development."). See generally Eugene M. Lewit & Linda Schuurmann Baker, *School Readiness*, 5 FUTURE CHILD. 128, 129 (1995) (explaining that "there is little agreement regarding the totality of the necessary and sufficient ingredients for readiness."); Gitanjali Saluja et al., *Readiness for School: A Survey of State Policies and Definitions*, 2 EARLY CHILDHOOD RES. & PRAC. 2 (2000) (surveying the standards and policies that different states have in place for assessing whether children are ready to enter school).

38. R.I. KIDS COUNT, GETTING READY: FINDINGS FROM THE NATIONAL SCHOOL READINESS INDICATORS INITIATIVE: A 17 STATE PARTNERSHIP 14 (2005), <http://www.doe.k12.de.us/cms/lib09/DE01922744/Centricity/Domain/146/gettingready.pdf> [<https://perma.cc/NTS6-BP3P>] (including "such factors as health status, growth, and disabilities; physical abilities, such as gross and fine motor skills").

39. *Id.* (encompassing "children's ability to interact with others and their capacity for self-regulation" and their "perceptions of themselves, their abilities to understand the feelings of other people, and their ability to interpret and express their own feelings").

40. *Id.* (referring to "children's inclination to use skills and knowledge. Key components include enthusiasm, curiosity, and persistence on tasks.").

41. *Id.* ("includ[ing] communication and emergent literacy. Communication includes listening, speaking, and vocabulary. Emergent literacy includes print awareness, story sense, early writing, and the connection of letters to sounds.").

and “[c]ognition and [g]eneral [k]nowledge.”⁴² It is regarded as a key predictor of important educational outcomes.⁴³

In recent years, researchers have shed new light on the importance of certain non-academic components of school readiness in structuring educational outcomes.⁴⁴ Of particular importance are the cognitive, emotional, and behavioral competencies that researchers refer to collectively as executive function skills,⁴⁵ or self-regulation.⁴⁶ These constructs encompass a wide range of skills including inhibitory control,⁴⁷ working memory,⁴⁸ cognitive flexibility,⁴⁹ attention span-

42. *Id.* (referring to “thinking and problem-solving as well as knowledge about particular objects and the way the world works” including “[m]athematical knowledge, abstract thought, and imagination”).

43. Forget-Dubois et al., *supra* note 24, at 745.

44. See Adele Diamond et al., *Preschool Program Improves Cognitive Control*, 318 SCI. 1387, 1387 (2007) (referring to a set of non-academic skills that are “more strongly associated with school readiness than are intelligence quotient (IQ) or entry-level reading or math skills.”).

45. See generally Philip David Zelazo & Stephanie M. Carlson, *Hot and Cool Executive Function in Childhood and Adolescence: Development and Plasticity*, 6 CHILD DEV. PERSP. 354, 354 (2012) (summarizing research finding that the executive function measures of children can predict later developmental outcomes).

46. See, e.g., Clancy Blair, *School Readiness: Integrating Cognition and Emotion in a Neurobiological Conceptualization of Children’s Functioning at School Entry*, 57 AM. PSYCHOLOGIST 111, 112 (2002) (“Whether defined as the regulation of emotion in appropriate social responding or the regulation of attention and selective strategy use in the execution of cognitive tasks, self-regulatory skills underlie many of the behaviors and attributes that are associated with successful school adjustment.”); Sara A. Schmitt et al., *Strengthening School Readiness for Head Start Children: Evaluation of a Self-Regulation Intervention*, 30 EARLY CHILDHOOD RES. Q. 20, 21 (2015) (“[E]vidence suggests that self-regulation is foundational for school success in that it helps children navigate structured learning environments, avoid distractions, pay attention, stay on task, and persist through difficulty.”).

47. See Diamond et al., *supra* note 44 (describing inhibitory control as “resisting habits, temptations, or distractions”); Khaled Sarsour et al., *Family Socioeconomic Status and Child Executive Functions: The Roles of Language, Home Environment, and Single Parenthood*, 17 J. INT’L NEUROPSYCHOLOGICAL SOC’Y 120, 120 (2011) (describing inhibitory control as “the ability to delay a well-learned prepotent response for the purposes of a more appropriate response”).

48. See Diamond et al., *supra* note 45 (describing working memory as “mentally holding and using information”); Sarsour et al., *supra* note 47 (describing working memory as “the ability to hold and manipulate complex information in the mind”).

49. See Diamond et al., *supra* note 44 (describing cognitive flexibility as “adjusting to change”); Sarsour et al., *supra* note 47 (describing cognitive flexibility as “the capacity to adapt behavior quickly and flexibly to changing situations”).

persistence,⁵⁰ and “the ability to regulate emotions.”⁵¹ In one study, human development researcher Megan McClelland and her colleagues found that self-regulation gains during preschool predicted year-end math, reading, and vocabulary gains.⁵² In another, education researchers Clancy Blair and Rachel Peters Razza found that preschoolers’ executive function skills were independently associated with greater math and literacy abilities in kindergarten.⁵³ Inadequate self-regulatory and executive function skills can contribute to school discipline problems that also undermine learning.⁵⁴

The scientific research discussed in this section makes clear that children’s early developmental experiences can both determine their readiness to enter school and powerfully influence their long-term educational outcomes. The following section identifies several potential long-term consequences of early childhood developmental disparities that can undermine the efficacy of the public education services that certain students receive later in childhood. The following section explains why these dynamics disproportionately disadvantage children from low-income households.

50. Attention span-persistence involves “selecting and attending to relevant information, such as listening to the teacher, and persisting on a task.” Megan M. McClelland et al., *Relations Between Preschool Attention Span-Persistence and Age 25 Educational Outcomes*, 28 EARLY CHILDHOOD RES. Q. 314, 315 (2013).

51. *Id.* at 314. These abilities enable young children to avoid inappropriate behavior and to control their emotions in classroom settings. *See id.*

52. Megan M. McClelland et al., *Links Between Behavioral Regulation and Preschoolers’ Literacy, Vocabulary, and Math Skills*, 43 DEVELOPMENTAL PSYCHOL. 947 (2007).

53. Clancy Blair & Rachel Peters Razza, *Relating Effortful Control, Executive Function, and False Belief Understanding to Emerging Math and Literacy Ability in Kindergarten*, 78 CHILD DEV. 647, 655 (2007). The results illustrated that each aspect of child self-regulation accounted for unique variance in math or literacy ability: effortful control and the inhibitory control aspect of executive function were positively related to math ability and letter knowledge, and false belief understanding was significantly related to letter knowledge but only marginally related to math knowledge. *Id.* at 657.

54. *See* Diamond et al., *supra* note 44, at 1387-88.

B. The School Readiness Gap and Its Enduring Educational Consequences

By the time they begin their formal educational careers, poor children fare worse than their peers across most dimensions of school readiness.⁵⁵ As child development researcher Karen Bierman explains, they face a wide range of disadvantages including deficits in “the cognitive skills that underlie emergent literacy, such as vocabulary, phonological awareness, and print knowledge and also in the social competencies and self-regulation skills needed for school success, including the capacity to focus attention, comply with rules, inhibit aggression, and sustain positive relationships with teachers and peers.”⁵⁶ Children of higher-socioeconomic status (SES) parents begin kindergarten with what researchers describe as “an enormous head start over kids from less advantaged families”⁵⁷ in terms of cognitive development and socio-emotional skills.⁵⁸ Language skills also vary substantially by social class: By the time they are three years old, children from low-income households have accrued vocabularies that are only half the size

55. See Rebecca M. Ryan et al., *Childhood Poverty: Implications for School Readiness and Early Childhood Education*, in HANDBOOK OF RESEARCH ON THE EDUCATION OF YOUNG CHILDREN 323, 323 (Bernard Spodek & Olivia N. Saracho eds., 2d ed. 2006) (examining the relationship between poverty and lack of school readiness); Bret D. Asbury & Kevin M. Woodson, *On the Need for Public Boarding Schools*, 47 GA. L. REV. 113, 131 (2012) (discussing the relationship between school readiness and parental SES).

56. Karen L. Bierman et al., *Effects of Head Start REDI on Children's Outcomes 1 Year Later in Different Kindergarten Contexts*, 85 CHILD DEV. 140, 140 (2014); see also Daniel A. Hackman & Martha J. Farah, *Socioeconomic Status and the Developing Brain*, 13 TRENDS COGNITIVE SCI. 65, 65 (2009) (“SES gradients have been observed in vocabulary, phonological awareness and syntax at many different stages of development.”); *id.* at 66 (“[T]he effects of poverty were disproportionate for certain neurocognitive systems, including language and executive function.”); Kimberly G. Noble et al., *Socioeconomic Gradients Predict Individual Differences in Neurocognitive Abilities*, 10 DEVELOPMENTAL SCI. 464, 464 (2007) (“SES is strongly associated with a number of indices of children’s cognitive ability and achievement, including IQ, achievement tests, grade retentions and literacy.”).

57. ANNIE E. CASEY FOUND., KIDS COUNT: DATA BOOK: STATE TRENDS IN CHILD WELL-BEING 8 (2016).

58. *Id.* at 8-9.

of those of their counterparts with highly educated parents.⁵⁹ Poor children are also less proficient in math-related tasks⁶⁰ and exhibit weaker self-regulation skills.⁶¹

These socioeconomic disparities appear to arise, to a significant extent, from class-based differences in caregiving practices.⁶² Researchers have found that poor children receive less emotional support and cognitive stimulation than their counterparts,⁶³ no doubt reflecting the intense psychological burdens of living in poverty,⁶⁴ which can hinder mothers from being optimally responsive and sensitive to some of their children's interactional and care needs.⁶⁵ Poor parents have

59. Hackman & Farah, *supra* note 56; see also Marianne M. Hillemeier et al., *Disparities in the Prevalence of Cognitive Delay: How Early Do They Appear?*, 23 PAEDIATRIC & PERINATAL EPIDEMIOLOGY 186 (2009) (observing that significant SES-based influences in cognitive development emerge by the time children are two years old).

60. RICHARD J. COLEY, EDUC. TESTING SERV., AN UNEVEN START: INDICATORS OF INEQUALITY IN SCHOOL READINESS 3-4 (2002). Early disparities in reading and math widen in elementary school. See Eric Dearing et al., *Does Higher Quality Early Child Care Promote Low-Income Children's Math and Reading Achievement in Middle Childhood?*, 80 CHILD DEV. 1329, 1329 (2009). By the time they reach fifth grade, disadvantaged children are "as much as 2 times more likely to lack proficiency in math and reading skills" than other children. *Id.*

61. Schmitt et al., *supra* note 46, at 20-21.

62. See generally Sarsour et al., *supra* note 47, at 122 (identifying a number of dimensions in which SES may shape the quality of various parenting behaviors and environmental conditions to the disadvantage of poor children). Although school readiness skills appear to be significantly influenced by heritable genetic traits, the existing research suggests that environmental factors are more powerful determinants. Jean-Pascal Lemelin et al., *The Genetic-Environmental Etiology of Cognitive School Readiness and Later Academic Achievement in Early Childhood*, 78 CHILD DEV. 1855, 1866 (2007) (concluding that in a study of 840 twins, "shared environment significantly contribute[d] to general and specific cognitive school readiness skills" and shared environment was more influential than genetic effects); see also Bonamy R. Oliver et al., *Predicting Literacy at Age 7 from Preliteracy at Age 4: A Longitudinal Genetic Analysis*, 16 PSYCHOL. SCI. 861, 864 (2005) (finding that "the association between early literacy experience and literacy outcomes . . . does not appear to be substantially mediated by . . . genetic factors, but rather is mediated by shared environmental influences" in a study of 3,052 pairs of twins).

63. Melhuish et al., *supra* note 8.

64. See Eric D. Finegood et al., *Psychobiological Influences on Maternal Sensitivity in the Context of Adversity*, 52 DEVELOPMENTAL PSYCHOL. 1073, 1074 (2016) ("[P]overty is physiologically taxing. Poverty is associated with alterations in the functioning of the hypothalamic-pituitary-adrenal (HPA) axis, measured most often by its chemical output cortisol, a glucocorticoid hormone.").

65. See *id.* (explaining that poverty is associated with higher cortisol concentrations, which in turn is associated with "negative mood and fatigue in mothers, and also with less sensitive behaviors").

been found to exhibit, on average, less warmth and responsiveness, and greater withdrawal and harshness, in their interactions with their children.⁶⁶ Parents of lower socioeconomic status spend less time per day reading to their children, which in turn impedes vocabulary development and school readiness.⁶⁷ In a landmark study,⁶⁸ researchers Betty Hart and Todd Risley observed parent-child interactions in forty families for more than two years⁶⁹ and found that poorer children received “substantially less time and effort from their parents” than did more affluent children.⁷⁰ Lower SES parents used prohibitive and “discouraging” language far more often than higher SES parents in interactions with their children,⁷¹ and asked their children far fewer questions.⁷² Hart and Risley found that these contrasting parenting styles were associated with children’s subsequent IQ gains.⁷³ Collectively, these and other differences in parental caregiving practices may account for a substantial proportion of the existing socioeconomic disparities

66. See Margaret Burchinal & Nina Forestieri, *Development of Early Literacy: Evidence from Major U.S. Longitudinal Studies*, in 3 HANDBOOK OF EARLY LITERACY RESEARCH 85, 88 (Susan B. Neuman & David K. Dickinson eds., 2011).

67. See, e.g., Forget-Dubois et al., *supra* note 24, at 744 (“[H]igh SES parents tend to read more to their toddlers which in turn contributes to their children having more developed language skills.”).

68. See generally William Yardley, *Betty Hart Dies at 85; Studied Disparities in Children’s Vocabulary Growth*, N.Y. TIMES (Oct. 25, 2012), <http://www.nytimes.com/2012/10/25/us/betty-hart-dies-at-85-studied-childrens-learning.html> [<https://perma.cc/56YC-F29B>] (describing the foundational role of Hart and Risley’s research in calling attention to the importance of parenting practices in child developmental outcomes).

69. Betty Hart & Todd R. Risley, *American Parenting of Language-Learning Children: Persisting Differences in Family-Child Interactions Observed in Natural Home Environments*, 28 DEVELOPMENTAL PSYCHOL. 1096, 1097 (1992).

70. *Id.* at 1103.

71. *Id.*

72. *Id.* at 1103. The researchers used the frequency of question asking as a measure of “the extent that parents prompt the child to take a turn” in interactions. *Id.* at 1099; see also Hart & Risley, *supra* note 69, at 1099 (“Parents use questions to learn about the child’s current understandings and readiness for new information. Importantly for socialization, questions ask the child to display knowledge and skills that prepare the child for performance in classroom and test situations and for sharing in discussions of societal rules and expectations.”).

73. *Id.* at 1100-01.

in certain early childhood development outcomes.⁷⁴ In the absence of greater governmental efforts to address and counteract these differences in caregiving practices, poor children will continue to suffer early childhood disparities and deficits that imperil their educational careers.

School readiness deficits and disparities in early academic skills eventually develop into lasting educational inequalities.⁷⁵ Over the past decade, researchers have linked various early academic indicators to a number of medium- and long-term consequences. Children's attention span-persistence and pre-academic knowledge scores upon school entry have been linked to a number of educational outcomes ranging from early elementary school achievement scores⁷⁶ to educational attainment in early adulthood.⁷⁷ In a particularly influential analysis that incorporated data sets from six longitudinal studies, Greg Duncan and his colleagues found that reading skills, math skills, and attention span abilities at the time of school entry each independently predicted later achievement in math and reading in the years spanning kindergarten to early adolescence.⁷⁸ Another longitudinal study found that certain

74. One study found that the effects of differences in parental caregiving practices are powerful enough to potentially explain in full the vast disparities in vocabulary development. Erika Hoff, *The Specificity of Environmental Influence: Socioeconomic Status Affects Early Vocabulary Development via Maternal Speech*, 74 CHILD DEV. 1368, 1373 (2003) ("[F]ull mediation was demonstrated because the association between SES and child vocabulary was no longer significant once the variance attributable to maternal speech was removed."); see also Forget-Dubois et al., *supra* note 24, at 737.

75. See Bierman et al., *supra* note 56 (characterizing school readiness deficit as "initiating an achievement gap that grows over time and contributes to large, long-term disparities in educational attainment, employment, and earnings.").

76. See, e.g., Kirby Deater-Deckard et al., *A Cross-Sectional Behavioral Genetic Analysis of Task Persistence in the Transition to Middle Childhood*, 8 DEVELOPMENTAL SCI. F21, F23 (2005) (finding a significant relationship between task persistence and various cognitive and achievement measures in kindergarten and first grade students); Claire Cameron Ponitz et al., *A Structured Observation of Behavioral Self-Regulation and Its Contribution to Kindergarten Outcomes*, 45 DEVELOPMENTAL PSYCHOL. 605, 613 (2009).

77. McClelland et al., *supra* note 50, at 316.

78. Greg J. Duncan et al., *School Readiness and Later Achievement*, 43 DEVELOPMENTAL PSYCHOL. 1428, 1437 (2007); *id.* at 1443 ("Our results suggest that attention skills, but not problem behavior or social skills, predict achievement outcomes, even after the effects of early achievement knowledge and cognitive ability have been

school readiness skills, including self-regulation and social competence, predicted children's academic achievement in reading and math from kindergarten through (at least) sixth grade.⁷⁹ Similarly, education researchers Terri Sabol and Robert Pianta found that various aspects of school readiness at fifty-four months predicted achievement and socioemotional development five years later, in the fifth grade.⁸⁰ Children with low working memory and social and externalizing problems at fifty-four months also had lower scores on fifth grade math and reading achievement.⁸¹

Recent studies have uncovered evidence suggesting that school readiness may significantly influence even more long-term educational outcomes. Researcher Megan McClelland and her team found that "for each single point higher a child was rated on attention span-persistence at age 4, s(he) was 14% more likely to graduate from college by age 25."⁸² A 2009 study examining the relationship between early behavior disturbances and academic achievement later in life found that attention, externalizing behavior, and internalizing behaviors at age six were all significantly associated with math and reading achievement test scores at age seventeen.⁸³ In a 2016 study, sociologist Jayanti Owens found that boys who exhibit

netted out."); see also Oliver et al., *supra* note 62 (finding that preliteracy knowledge at age four predicted student reading and writing skills at age seven).

79. Megan M. McClelland et al., *The Impact of Kindergarten Learning-Related Skills on Academic Trajectories at the End of Elementary School*, 21 EARLY CHILDHOOD RES. Q. 471, 478 (2006); see also Megan M. McClelland et al., *Children at Risk for Early Academic Problems: The Role of Learning-Related Social Skills*, 15 EARLY CHILDHOOD RES. Q. 307, 326 (2000) (finding that children who begin kindergarten with poor work-related social skills scored worse on second grade reading and math achievement measures).

80. Terri J. Sabol & Robert C. Pianta, *Patterns of School Readiness Forecast Achievement and Socioemotional Development at the End of Elementary School*, 83 CHILD DEV. 282, 293 (2012).

81. *Id.* at 292; see also *id.* (finding that children with higher disruptive behavior disorders at fifty-four months of age also showed significantly higher disruptive behaviors in fifth grade than their peers).

82. McClelland et al., *supra* note 50, at 319; see also *id.* (finding that "being rated one standard deviation higher on attention span-persistence at age 4 increased the odds of completing college by age 25 by 48.7%.").

83. Joshua Breslau et al., *The Impact of Early Behavior Disturbances on Academic Achievement in High School*, 123 PEDIATRICS 1472, 1474-75 (2009).

externalizing problems at age four or five go on to experience a lifetime of educational disparities.⁸⁴ They are not only significantly less likely to graduate from high school than their peers,⁸⁵ but those who do graduate are less likely to enroll in college,⁸⁶ and those who enroll in college are less likely to attain four-year degrees.⁸⁷ Collectively, these studies strongly suggest that the conditions that shape the first few years of childhood may have enduring, lifelong effects.

The empirical research presented in this Part illuminates the causal process through which SES-based disparities in early childhood development produce school readiness deficits that profoundly inhibit the long-term educational trajectories of disadvantaged children. These dynamics greatly undermine, and compound the inadequacy of, the educational resources that governments provide disadvantaged children via public elementary and secondary schools. It follows from this research on the early origins of educational inequality, that states should make available far greater resources for early childhood education and development. As one team of social scientists concluded, these findings “support early intervention in the family environment, or through surrogate parenting, aiming at improving child language and [school readiness].”⁸⁸ As the Article explains below, one potential way to bring about such policies is through educational adequacy litigation. Over the past thirty years, adequacy litigation has stood as perhaps the most promising legal channel for forcing states to devote greater resources to the educational needs of disadvantaged children. Yet, despite dozens of lawsuits challenging the provision of public education in states throughout the country, very few state high courts have required states to provide early childhood

84. Jayanti Owens, *Early Childhood Behavior Problems and the Gender Gap in Educational Attainment in the United States*, 89 SOC. EDUC. 236, 254 (2016). Owens constructs her “externalizing problems” measure through a composite scale of several self-regulation and social problems. *Id.* at 240-41.

85. Owens, *supra* note 84, at 249-50.

86. *Id.*

87. *Id.* Owens also found that girls with these early school readiness problems went on to attain fewer years of total schooling. *See id.* at 254.

88. Forget-Dubois et al., *supra* note 24, at 747.

programs. The following Part provides a brief overview of educational adequacy litigation and a discussion of the near-complete failure of courts to provide early childhood-based remedies.

III. THE INADEQUATE CONSIDERATION OF EARLY CHILDHOOD IN ADEQUACY LITIGATION

All fifty states have clauses in their constitutions that obligate their governments to provide some form of public education.⁸⁹ The precise nature of these requirements, however, has been the source of considerable controversy and contention. The texts of these clauses are as a rule vague and indeterminate,⁹⁰ and most were not originally intended to establish judicially enforceable qualitative standards.⁹¹ Thus, it is not surprising that these clauses did not play much of a role in efforts to force states to allocate greater resources to low-income children for most of America's history.⁹² In the past thirty years, however, courts have interpreted these education clauses expansively enough to encompass all manner of comprehensive educational reforms and remedies, including, potentially, early

89. EMILY PARKER, 50-STATE REVIEW: CONSTITUTIONAL OBLIGATIONS FOR PUBLIC EDUCATION, EDUC. COMMISSION ST. (2016), <http://www.ecs.org/ec-content/uploads/2016-Constitutional-obligations-for-public-education-1.pdf> [<https://perma.cc/6NJ9-HK68>].

90. See, e.g., Derek Black, *Unlocking the Power of State Constitutions with Equal Protection: The First Step Toward Education as a Federally Protected Right*, 51 WM. & MARY L. REV. 1343, 1367 (2010) (explaining that the substantive meaning of various state education clauses are "entirely dependent on the court defining and applying them."). Though legal scholars have categorized education clauses of state constitutions through various typologies according to the degrees of robustness and substantive rights, it is unclear whether these distinctions have proved meaningful in actual school finance litigation. See John Dayton, *Serrano and Its Progeny: An Analysis of 30 Years of School Funding Litigation*, 157 EDUC. L. REP. 447, 457 (2001); John Dayton & Anne Dupre, *School Funding Litigation: Who's Winning the War?*, 57 VAND. L. REV. 2351, 2387 (2004).

91. See Martin R. West & Paul E. Peterson, *The Adequacy Lawsuit: A Critical Appraisal*, in *SCHOOL MONEY TRIALS: THE LEGAL PURSUIT OF EDUCATIONAL ADEQUACY* 1, 9 (Martin R. West & Paul E. Peterson eds., 2007).

92. See MICHAEL A. REBELL, *CAMPAIGN FOR EDUC. EQUITY, PROVIDING COMPREHENSIVE EDUCATIONAL OPPORTUNITY TO LOW-INCOME CHILDREN: A LEGAL FRAMEWORK* 18 (2011) (explaining that "contemporary courts have, in essence, revived and given major significance to the long-dormant provisions").

childhood education. The following sections provide a brief overview of this litigation and the near-total unwillingness of courts to require early childhood remedies.

A. Educational Adequacy Litigation

State education clause-based “adequacy” litigation has widely been characterized as the third in a series of “waves” of school finance litigation based on distinct constitutional provisions and theories.⁹³ Beginning in the late 1960s, the lawsuits in the ill-fated first wave challenged inter-district disparities in school funding as violating the Equal Protection Clause of the United States Constitution.⁹⁴ Though first wave litigants challenging California’s school funding system prevailed in *Serrano v. Priest*,⁹⁵ the Supreme Court’s ruling in *San Antonio Indep. Sch. Dist. v. Rodriguez*⁹⁶ that wealth-based inter-district funding disparities did not harm any protected classes of citizens under the United States Constitution,⁹⁷ quickly sounded the death knell for this wave of cases. This ruling fostered a second wave of litigation in which litigants challenged school funding disparities under the equal protection clauses of their respective state constitutions.⁹⁸ Though second-

93. See William E. Thro, *The Third Wave: The Impact of the Montana, Kentucky, and Texas Decisions on the Future of Public School Finance Reform Litigation*, 19 J.L. & EDUC. 219, 222 (1990) (introducing the wave metaphor); see also James E. Ryan & Thomas Saunders, *Foreword to Symposium on School Finance Litigation: Emerging Trends or New Dead Ends?*, 22 YALE L. & POL’Y REV. 463, 466 n.19 (2004) (explaining that the wave metaphor has become “ubiquitous” in the scholarship on school finance litigation).

94. See Ryan & Saunders, *supra* note 93, at 466.

95. 487 P.2d 1241, 1266 (Cal. 1971).

96. 411 U.S. 1 (1973).

97. *Id.* at 28 (finding that the inhabitants of non-wealthy school districts were “a large, diverse, and amorphous class, unified only by the common factor of residence in districts that happen to have less taxable wealth than other districts” and that “[t]he system of alleged discrimination and the class it defines have none of the traditional indicia of suspectness”).

98. To be clear, the plaintiffs in the *Serrano* litigation had included both federal and state-based claims in their original lawsuit. See *Serrano v. Priest*, 557 P.2d 929, 930 (Cal. 1976) (*Serrano II*).

wave plaintiffs enjoyed a number of legal victories, the state defendants prevailed in the majority of these cases.⁹⁹

While the equity-based challenges of the second wave eventually fizzled, litigants began to achieve greater success with lawsuits based on a different part of their state constitutions—the education clauses. Litigants in these cases have argued that qualitative adjectives such as “adequate,” “efficient,” and “thorough” in the education clauses of their state constitutions establish minimum standards of quality for public education in their states.¹⁰⁰ These arguments have enjoyed great success relative to the equity-based arguments advanced in the first two waves of school finance litigation.¹⁰¹ All told, adequacy plaintiffs have prevailed in at least twenty-five states,¹⁰² and there are currently a number of cases pending in other states.¹⁰³ In several instances, these favorable rulings have set in motion legal and policy reforms that have provided considerable additional funds and resources to schools in need.

Although the wave metaphor arguably overstates the differences between these adequacy- and equity-based constitutional challenges,¹⁰⁴ the rise of the third wave cases fundamentally transformed school finance litigation in at least one critical respect. In determining the components of adequate

99. William S. Koski, *Of Fuzzy Standards and Institutional Constraints: A Re-Examination of the Jurisprudential History of Educational Finance Reform Litigation*, 43 SANTA CLARA L. REV. 1185, 1189 (2003).

100. *Id.* at 1258.

101. In several instances, litigants were able to advance claims on adequacy grounds where earlier equality-based lawsuits previously had failed. *See id.* at 1276-77. Law professor William Kolski identifies Arizona, Idaho, New York, North Carolina, Ohio, and South Carolina as states where third-wave lawsuits were more successful than second-wave suits. *Id.*

102. *See* West & Peterson, *supra* note 91, at 2.

103. *But see* Julia A. Simon-Kerr & Robynn K. Sturm, *Justiciability and the Role of Courts in Adequacy Litigation: Preserving the Constitutional Right to Education*, 6 STAN. J. C.R. & C.L. 83, 95 (2010) (noting that plaintiffs were not particularly successful in adequacy lawsuits during the period between 2005 and 2008).

104. The wave model arguably downplays the extent to which adequacy-based cases actually are grounded in, and in some instances decided upon, measures of equity and equality. The wave narrative also overstates the chronological ordering of these cases. The earliest adequacy cases predated many of the equity cases. Further, litigants in some states have continued to bring equity-based cases long after the rise of adequacy-based constitutional challenges.

educational opportunities, courts unprecedentedly assume a role in education policy decision-making that has traditionally been the sole province of state legislatures. Whereas equity cases to a large extent hinge upon determinations of objective facts concerning funding dollars and tax burdens, adequacy-based cases require judges to make difficult, subjective determinations about the very purposes of education and the nature of educational opportunity. Rulings in adequacy cases therefore reflect the discretionary interpretations and conclusions of individual judges even more so than many other areas of constitutional law.

School finance litigation courts have interpreted education clauses as requiring that states provide students meaningful opportunities to develop certain specific academic skills and life competencies.¹⁰⁵ A prime example of this can be found in one of the earliest adequacy rulings, *Rose v. Council for Better Educ.*¹⁰⁶ In *Rose*, sixty-six poor districts challenged the state legislature on the grounds that it violated its constitutional duty to "provide for an efficient system of common schools throughout the State."¹⁰⁷ The Kentucky Supreme Court agreed, interpreting the rather sparse and vague text of the state constitution directive quite expansively.¹⁰⁸ In doing so, it created a list of seven competencies that Kentucky was obligated to attempt to provide all schoolchildren. These included:

- (i) sufficient oral and written communication skills to enable students to function in . . . civilization; (ii) sufficient knowledge of economic, social, and political systems to enable the student to make informed choices; (iii) sufficient understanding of governmental processes to enable the student to understand the issues that affect his or her . . . nation; (iv) sufficient self-knowledge and knowledge of his or her mental and physical wellness; (v) sufficient . . . arts [education] to enable each student to appreciate [their]

105. See *infra* notes 106-111 and accompanying text.

106. 790 S.W.2d 186 (Ky. 1989).

107. *Id.* at 190; KY. CONST. § 183.

108. *Rose*, 790 S.W.2d at 215-16.

cultural and historic heritage; (vi) sufficient training or preparation for advanced training in either academic or vocational fields . . . ; and (vii) sufficient levels of academic or vocational skills to enable . . . students to compete . . . in the job market.¹⁰⁹

This approach of delineating specific constitutionally mandated educational objectives proved to be quite influential. Following *Rose*, a number of other state courts read similar requirements into their state educational provisions,¹¹⁰ in several instances expressly incorporating the very standards set forth in *Rose*.¹¹¹

Other courts declined to create their own educational criteria and instead turned to pre-existing standards that had been enacted by state legislatures or administrative agencies.¹¹² In addition to specifying particular skills and areas of knowledge that states must provide students opportunities to master, similar to the judicially crafted educational requirements set forth in

109. *Id.* at 212. Though *Rose* is considered the most influential of the third-wave cases, the Supreme Court of Appeals of West Virginia issued a similar ruling more than a decade earlier in *Pauley v. Kelly*, 255 S.E.2d 859 (W.Va. 1979). *Pauley* represented the first time that a court laid out comprehensive substantive standards to flesh out the vague constitutional language of its education clause. See *id.* at 877-78; Dayton & Dupre, *supra* note 90, at 2365-66.

110. See, e.g., *Gannon v. State*, 319 P.3d 1196, 1236-37 (Kan. 2014) (explaining that the constitution's adequacy requirement "is met when the public education financing system provided by the legislature for grades K-12—through structure and implementation—is reasonably calculated to have all Kansas public education students meet or exceed the standards set out in *Rose* and presently codified in K.S.A.2013 Supp. 72-1127."); *Abbeville Cty. Sch. Dist. v. State*, 515 S.E.2d 535, 540 (S.C. 1999) (defining an adequate education as providing students fundamental knowledge in a variety of areas and vocational and academic skills); *Campaign for Fiscal Equity, Inc. v. State*, 801 N.E.2d 326, 330 (N.Y. 2003) (CFE II) ("[A] sound basic education conveys . . . skills fashioned to meet a practical goal: meaningful civic participation in contemporary society.").

111. See Educ. Law Ctr., *Kentucky*, EDUC. JUST., <http://www.educationjustice.org/states/kentucky/> [<https://perma.cc/9TXY-ZCZ9>] (noting that courts in Alabama, Arkansas, Kansas, Massachusetts, New Hampshire, North Carolina, South Carolina, and Texas have adopted the *Rose* standard). See, e.g., *Claremont Sch. Dist. v. Governor*, 703 A.2d 1353, 1359 (N.H. 1997) ("We look to the seven criteria articulated by the Supreme Court of Kentucky as establishing general, aspirational guidelines for defining educational adequacy."); *McDuffy v. Sec'y of Exec. Office of Educ.*, 615 N.E.2d 516, 554 (Mass. 1993).

112. See, e.g., *McCleary v. State*, 269 P.3d 227, 231-33 (Wash. 2012) (en banc) (applying the learning goals from state legislation and essential academic learning requirements implemented by the executive branch); *Unified Sch. Dist. No. 229 v. State*, 885 P.2d 1170, 1185-87 (Kan. 1994) (applying the standards found in K.S.A. § 72-6439(a)).

Rose, these legislative and executive standards often also contain inter-state “competitiveness” clauses requiring states to prepare their students to compete with students from other states in college admissions and labor markets.¹¹³ An example of this line of cases is *Op. of the Justices No. 338*,¹¹⁴ where the Alabama Supreme Court evoked language from Senate Bill 607,¹¹⁵ which defined “[a]dequate educational opportunities” as providing students opportunities to attain competencies in math, science, and communications, as well as self-knowledge, knowledge of the arts,¹¹⁶ and the opportunity to develop “[s]ufficient levels of academic or vocational skills to . . . compete favorably with their counterparts in Alabama, in surrounding states, across the nation, and throughout the world, in academics or in the job market.”¹¹⁷

After determining that states have run afoul of the requirements of their education clauses, courts also exercise considerable discretion in determining what, if any, remedies to provide plaintiffs. In doing so, courts have taken a variety of approaches. Some have ordered legislatures to make greater funding available to low-income districts for the designated purposes, often including the hiring of additional staff and repairing inadequate facilities.¹¹⁸ In others, courts have acted more deferentially, allowing state legislatures to devise their

113. See, e.g., *Op. of the Justices No. 338*, 624 So. 2d 107, 108, 138, 166 (Ala. 1993).

114. *Id.* at 155.

115. *Id.* at 155. The legislation was introduced in response to a previous decision holding the state’s school finance system unconstitutional. See *Ala. Coal. for Equity, Inc. v. Hunt*, 1993 WL 204083, at *1 (Ala. Cir. Ct. Apr. 1, 1993).

116. *Op. of the Justices No. 338*, 624 So. 2d at 107-108.

117. *Id.* at 108. Other state courts have taken similar approaches. See *Edgewood Indep. Sch. Dist. v. Meno*, 917 S.W.2d 717, 728 n.7 (Tex. 1995) (referring to legislation that provided that all students must “have access to an education of high quality that will prepare them to participate fully now and in the future in the social, economic, and educational opportunities available in Texas” and obligating the state to reduce the class-based achievement gap).

118. See *Gannon v. State*, No. 113,267, slip op. at 81-83 (Kan. Super. Ct. Mar. 2, 2017); see also Casey Quinlan, *Kansas Supreme Court Orders Lawmakers to Fix School Funding That’s Biased Against Poor Districts*, THINKPROGRESS (Feb. 17, 2016), <https://thinkprogress.org/kansas-supreme-court-orders-lawmakers-to-fix-school-funding-thats-biased-against-poor-districts-802440b2b1d1#5x6d5ny> [https://perma.cc/65TE-LV43].

own plans for remedying the constitutional deficiencies.¹¹⁹ But no matter which branch of government has assumed primary responsibility in the remedial phases of these lawsuits, these efforts have rarely embraced early childhood education as constitutionally mandated remedies.¹²⁰

B. The K-12 Focus of Adequacy Litigation

To date, only three state high courts, the New Jersey Supreme Court,¹²¹ the South Carolina Supreme Court,¹²² and the North Carolina Court of Appeals,¹²³ have ordered states to provide early childhood education to low-income children. There have been several other cases where state high courts have rejected requests for such measures. In two states, Arkansas and Massachusetts,¹²⁴ trial courts ordered state legislatures to provide

119. See, e.g., *Campbell Cty. Sch. Dist. v. State*, 907 P.2d 1238, 1279 (Wyo. 1995) (ordering the legislature to retain experts to determine the funding levels necessary for adequacy and the costs of providing them to all school children).

120. See William S. Koski & Rob Reich, *When "Adequate" Isn't: The Retreat from Equity in Educational Law and Policy and Why It Matters*, 56 EMORY L.J. 545, 570 (2006) (noting the absence of court rulings ordering states to provide preschool education to disadvantaged children).

121. See *Abbott v. Burke*, 710 A.2d 450, 493 (N.J. 1998) (Abbott V). New Jersey and its *Abbott* rulings, which ordered schools to provide adequate early childhood education to low-income children, will be discussed in greater detail below. See *infra* Part IV.C.4.

122. See *Abbeville Cty. Sch. Dist. v. State*, 767 S.E.2d 157, 178-80 (S.C. 2014). The General Assembly of South Carolina already created an early childhood intervention program in 2007 in response to a lower court ruling that found its failure to provide such a program unconstitutional. See *id.* at 162. *Abbeville* is the only such ruling in the decade that has elapsed since Ryan published his article.

123. *Hoke Cty. Bd. of Educ. v. State*, 731 S.E.2d 691, 692, 695 (N.C. Ct. App. 2012). The court in *Hoke Cty. Bd. of Educ.* only affirmed a lower court order requiring the state legislature to provide public pre-kindergarten to the state's at-risk children because the legislature previously chose pre-kindergarten as a means of remedying the constitutional failure of the state's public school system and failed to offer any alternative plans. *Id.* at 695. In an earlier case, the Court of Appeals eliminated the portion of a lower court ruling ordering the state to provide pre-kindergarten to low-income children as premature, instead deferring to the legislative and executive branches to formulate their own remedies. See *Hoke Cty. Bd. of Educ. v. State*, 599 S.E.2d 365, 392-94 (N.C. 2004).

124. See *Lake View Sch. Dist. No. 25 of Phillips Cty. v. Huckabee*, 351 Ark. 31, 81-82, 91 S.W.3d 472, 501-02 (2002); *Hancock v. Comm'r of Educ.*, 822 N.E.2d 1134, 1156-57 (Mass. 2005). This also occurred in North Carolina, though the Court of Appeals ultimately ordered the legislature to continue to provide pre-kindergarten for at-risk children in the absence of any alternative remedies. See *Hoke Cty. Bd. of Educ.*, 599 S.E.2d at 392-94.

preschool for children in poor districts only to ultimately have their rulings overturned or set-aside on appeal. In *Hancock v. Comm'r of Educ.*,¹²⁵ the Massachusetts Supreme Court rejected a lower court ruling ordering public preschool as a remedy for the state's educational inadequacies, holding instead that the decision to provide such programs fell within the policy-making discretion of the state legislature.¹²⁶ In *Lake View Sch. Dist. No. 25 of Phillips Cty.*,¹²⁷ the Arkansas Supreme Court overturned a trial court ruling that ordered the state legislature to establish a preschool program for disadvantaged children. The court reached this holding by interpreting language in the state constitution providing the state legislature discretion to fund education for children under six¹²⁸ as removing any judicial authority to order such spending, even in the context of remedying previously identified constitutional violations.¹²⁹

Similarly, in *Campbell Cty. Sch. Dist. v. State*,¹³⁰ the Supreme Court of Wyoming upheld a lower court summary judgment ruling holding that the state could not be obligated to provide pre-kindergarten¹³¹ based on age-specific language in the Wyoming state constitution requiring the legislature to "create and maintain a thorough and efficient system of public schools, adequate to the proper instruction of all youth of the state, between the ages of six and twenty-one years."¹³² The plaintiffs in the case had argued that the age-specific language should be understood as setting a minimum floor for the state's obligation (and not a ceiling) and that another provision that

125. 822 N.E.2d 1134 (Mass. 2005).

126. *Id.* at 1156 (calling the choice to provide preschool for at-risk children "a policy decision for the [l]egislature").

127. *Lake View Sch. Dist. No. 25 of Phillips Cty.*, 351 Ark. at 81-82, 91 S.W.3d at 501-02; *see also* *Lake View Sch. Dist. No. 25 of Phillips Cty. v. Huckabee*, 358 Ark. 137, 155-56, 189 S.W.3d 1, 12-13 (2004) (reiterating that the creation of state-funded preschool programs was solely within the discretion of the legislature).

128. *See* ARK. CONST. art. 14, § 1 (providing that the General Assembly and public school districts "may spend public funds for the education of persons . . . under six (6) years of age, as may be provided by law").

129. *Lake View Sch. Dist. No. 25 of Phillips Cty.*, 351 Ark. at 81-82, 91 S.W.3d at 501-02.

130. 181 P.3d 43 (Wyo. 2008).

131. *Id.* at 69-70.

132. WYO. CONST. art. 7, § 9.

obligated the legislature to “provide for the establishment and maintenance of a complete and uniform system of public instruction, embracing free elementary schools of every needed kind and grade . . . and such other institutions as may be necessary”¹³³ could be interpreted to require the provision of state-funded pre-kindergarten services.¹³⁴ The court rejected these arguments for the pre-kindergarten remedy out of hand,¹³⁵ and focused instead on other indicia of educational opportunities including teacher salaries, student activities, and building construction and infrastructure.¹³⁶ In the past decade, decisions in adequacy cases in other states, including New York and New Hampshire, also have declined potential opportunities to recognize early childhood programs as constitutional requirements.¹³⁷ As this sample of cases makes clear, courts considering potential remedies to address constitutional deficiencies in state school systems, courts have time and time again declined to place judicial impetus behind early childhood education. In the wake of this inaction, low-income children in these states continue to disproportionately lack access to high-quality early childhood education and enrichment programs that they need more than anyone else.¹³⁸

As a result, despite a massive increase in the percentage of American children enrolled in preschool in the late twentieth

133. WYO. CONST. art. 7, § 1.

134. *Campbell Cty. Sch. Dist.*, 181 P.3d at 69-70.

135. *Id.*

136. *Id.* at 53, 71-75, 79.

137. See *Campaign for Fiscal Equity, Inc. v. State*, 861 N.E.2d 50, 61 (N.Y. 2006); *Claremont Sch. Dist. v. Governor*, 794 A.2d 744, (N.H. 2002). The most recent iteration of education adequacy litigation in New York, *Maisto v. State of New York*, does not appear to address early childhood education at all. No. 26463, slip op. at 3-4 (N.Y. Sup. Ct. Sept. 19, 2016).

138. See BRUCE D. BAKER, SCHOOL FUNDING FAIRNESS IN NEW YORK STATE: AN UPDATE FOR 2013-14, at 5-6 (2014) (reporting that as of the 2013-14 school year, three-year-old children from low-income families were only seventy-five percent as likely as their more affluent counterparts to be enrolled in school); BRUCE D. BAKER ET AL., EDUC. LAW CTR., IS SCHOOL FUNDING FAIR?: A NATIONAL REPORT CARD 26-27 (4th ed. 2015) (concluding that New Hampshire remains one of a handful of states where children from low-income families enroll in preschool at only roughly half the rate of their more privileged counterparts).

century,¹³⁹ national preschool attendance rates still lag behind those of many other developed countries.¹⁴⁰ Despite a considerable increase in state funding in recent years,¹⁴¹ the total rate of preschool enrollment has increased only marginally.¹⁴² In a recent report, the Annie E. Casey Foundation found that 4.4 million three- and four-year old children—fifty-three percent of

139. The rise of mass preschool enrollment is a relatively recent development in American education. As recently as 1960, a mere ten percent of preschool-aged children received classroom based educational services. W. STEVEN BARNETT ET AL., NAT'L INST. FOR EARLY EDUC. RESEARCH, *THE STATE OF PRESCHOOL: 2003 STATE PRESCHOOL YEARBOOK* 7 (2003). By the late 1990s, this figure had risen to just over fifty percent. *Id.* As of 2013, more than two-thirds of all four-year olds, and forty percent of all three-year olds, regularly attend some type of preschool program. U.S. DEP'T OF EDUC., NAT'L CTR. FOR EDUC. STATISTICS, *DIGEST OF EDUCATION STATISTICS 2014*, at 81 (2016), http://nces.ed.gov/programs/digest/d14/tables/dt14_202.10.asp [<https://perma.cc/2UXJ-UY9H>].

140. As of 2013, the United States was beneath the OECD averages for enrollment in formal childcare for children two years old or younger and, especially, for preschool for three- to five-year olds. OECD, *FAMILY DATABASE: PF3.2: ENROLLMENT IN CHILDCARE AND PRE-SCHOOL* 3, 6 (2016), <http://www.oecd.org/els/family/database.htm> [<https://perma.cc/CBE3-G526>]. See generally Lillian Mongeau, *Why Does America Invest So Little In Its Children?*, ATLANTIC (July 12, 2016), <http://www.theatlantic.com/education/archive/2016/07/why-does-america-invest-so-little-in-its-children/490790/> [<https://perma.cc/E9YF-RUKT>] (explaining that the United States “ranked 35th among developed economies in pre-primary- or primary-school enrollment for 3- to 5-year-olds”). “On every level—local, state, and federal—this country invests little to nothing in the first five years of a child’s life, putting it decades and dollars behind the rest of the developed world.” *Id.* Former U.S. Secretary of Education, Arne Duncan, described this underinvestment as “a loss of human potential” with “massive” implications. *Id.*

141. See Carolyn J. Hill et al., *Do the Short-Term Effects of a High-Quality Preschool Program Persist?*, 32 *EARLY CHILDHOOD RES. Q.* 60, 60 (2015) (“From 2002 to 2012, state-funded pre-K program enrollment doubled, with a total of 40 states now serving more than 1.3 million children.”). Whereas states spent a total of less than \$2.5 billion on state-funded pre-kindergarten programs as recently as the 2001-2002 school year, they now spend upward of \$6 billion. See BARNETT ET AL., *supra* note 139, at 5; W. STEVEN BARNETT ET AL., NAT'L INST. FOR EARLY EDUC. RESEARCH, *THE STATE OF PRESCHOOL* 2015, at 6 (2016). In 2015, a total of 1.4 million children, approximately twenty-nine percent of all four-year-olds and five percent of all three-year-olds, received state-funded pre-kindergarten services. *Id.* at 6. For many decades, states had played a relatively minor role in supporting early childhood education. See BARNETT ET AL., *supra* note 139, at 8-9 (explaining that only seven states funded preschool prior to 1980 and nearly two-thirds of preschool students still attended private programs as recently as 1990).

142. See, e.g., W. STEVEN BARNETT ET AL., NAT'L INST. FOR EARLY EDUC. RESEARCH, *IMPLEMENTING 15 ESSENTIAL ELEMENTS FOR HIGH QUALITY: A STATE AND LOCAL POLICY SCAN 1* (2016) [hereinafter BARNETT ET AL., *IMPLEMENTING 15 ESSENTIAL ELEMENTS FOR HIGH QUALITY*]; BARNETT ET AL., *supra* note 141 (“Since 2010, total enrollment in these programs at age 4 has risen by just one percentage point and enrollment at age 3 by one percentage point as well.”).

all children in that age group—were not enrolled in school.¹⁴³ Large social class-based disparities persist as preschool attendance decreases from 83% for the most affluent four-year-olds to 50% for the most disadvantaged.¹⁴⁴ A full 61% of three- and four-year old children with household incomes below less than 200% of the poverty line do not attend school on a regular basis.¹⁴⁵ Further, even many of the lower-income children fortunate enough to attend preschool are enrolled in programs of questionable quality.¹⁴⁶ Advocates have estimated that fewer than half of all low-income American children presently have access to high-quality programs.¹⁴⁷ Though the available data on toddlers and infants is far less comprehensive, these younger children receive substantially less state-funded educational and enrichment services. Only 16% of two-year-olds receive center-based care of any kind,¹⁴⁸ and only a mere 13% of the children in that group receive high quality care.¹⁴⁹

As the research presented above makes clear, the many poor children who lack access to high-quality early childhood care, either at home or through center-based programs, already

143. ANNIE E. CASEY FOUND., *supra* note 58, at 26.

144. BARNETT ET AL., IMPLEMENTING 15 ESSENTIAL ELEMENTS FOR HIGH QUALITY, *supra* note 142, at 2. *See also id.* (“[S]erious inequality in access has persisted in the face of the expansion of public programs This means that there is still a large job to be done with respect to increasing access, especially for the most disadvantaged children.”).

145. *See* Annie E. Casey Found., *Young Children Not in School, By Poverty Status*, KIDS COUNT DATA CTR., <http://datacenter.kidscount.org/data/tables/9011-young-children-not-in-school-by-poverty-status?loc=1&loct=1#detailed/1/any/false/1485,815/any/17979,17980> [<https://perma.cc/6GVT-WY9F>].

146. *See id.*; *see also* LAWRENCE J. SCHWEINHART ET AL., THE HIGH/SCOPE PERRY PRESCHOOL STUDY THROUGH AGE 40: SUMMARY, CONCLUSIONS, AND FREQUENTLY ASKED QUESTIONS 6 (2005).

147. *Why It Matters: The Need*, FIRST FIVE YEARS FUND, <http://ffyf.org/why-it-matters/the-need/> [<https://perma.cc/XR45-P2C7>]; *see also* Motoko Rich, *Language-Gap Study Bolsters a Push for Pre-K*, N.Y. TIMES, Oct 22, 2013, at A1 (“In one study, Robert Pianta, dean of the Curry School of Education at the University of Virginia, found that in observations of 700 preschool classrooms across 11 states, teachers in less than 15 percent of the classes demonstrated ‘effective teacher-student interactions.’”).

148. *See* Eric Ruzek et al., *The Quality of Toddler Child Care and Cognitive Skills at 24 Months: Propensity Score Analysis Results From the ECLS-B*, 29 EARLY CHILDHOOD RES. Q. 12, 16-17 (2014).

149. *Id.*

begin to suffer profound developmental lags that can contribute to life-long achievement gaps and educational underperformance.¹⁵⁰ Accordingly, the following Part argues that courts must pursue remedies that take effect as close to birth as possible and certainly well before disadvantaged children enter kindergarten. This Part offers a two-pronged argument for how courts and legislatures should work to provide more meaningful educational opportunities provided to disadvantaged public school students. As a first step, courts should seek to provide high-quality preschool for students in districts that have been found to provide constitutionally inadequate educational opportunities. But although preschool-based remedies represent an important step in the right direction, they still would not go far enough in addressing the developmental needs of disadvantage children. Accordingly, this Part also argues that courts and legislatures should supplement these efforts at early remediation with even further-reaching programs and experiments designed to provide services to more disadvantaged families as close to childbirth as possible. This Part supports this proposal through evidence drawn from a large body of experimental and quantitative empirical research that demonstrates the success of certain existing programs in improving the academic and life outcomes of poor children.¹⁵¹

IV. THE NEED FOR EARLY CHILDHOOD REMEDIES IN EDUCATIONAL ADEQUACY LITIGATION

“[B]ecause an opportunity exists only when it takes into account the conditions—social, economic, and other—that realistically limit the opportunity, the educational offering must be tailored

150. See *supra* Part II.A and Part II.B.

151. The past ten years has seen an explosion of social science research assessing the impact of a vast array of initiatives aimed at educating and supporting young children and their families. See, e.g., Katherine Magnuson & Greg J. Duncan, *Can Early Childhood Interventions Decrease Inequality of Economic Opportunity?*, 2 RUSSELL SAGE FOUND. J. SOC. SCI. 123, 138 (2016) (discussing the long-term benefits of high-quality early education).

*to meet the adequacy standard in the context of the social and economic conditions of the children to whom it is offered.”*¹⁵²

As the sample of cases discussed in the previous section reveals,¹⁵³ courts and legislatures have assessed potential reforms for constitutionally defective educational systems with an eye toward their expected effects on student outcomes. Accordingly, the argument for requiring early childhood remedies is fairly straightforward. A considerable body of empirical research confirms that early childhood services can improve the school readiness and overall development of disadvantaged children while thereby increasing the value of later educational services.¹⁵⁴ The following section considers the evidence on the potential value of high-quality preschool programs for disadvantaged children. These programs are valuable both in their own right and, perhaps even more importantly, as a necessary bridge to even earlier childhood remedies.

A. Free Preschool as a Remedy for Inadequate Opportunity

That high-quality preschool programs can improve the educational and life outcomes of disadvantaged children is well supported by the empirical research on historic and existing programs.¹⁵⁵ In their review of the existing research, economist Greg Duncan and social worker Katherine Magnuson conclude that “long-run follow-ups from a handful of well-known programs show lasting positive effects on such outcomes as greater educational attainment, higher earnings, and lower rates of crime.”¹⁵⁶ The long-term benefits of the High Scope Perry Program (Perry Program) experiment in particular have been

152. Conn. Coal. for Justice in Educ. Funding, Inc. v. Rell, 990 A.2d 206, 290 (Conn. 2010) (Schaller, J., concurring).

153. See *supra* Part III.

154. See *supra* Part II.

155. See, e.g., Hill et al., *supra* note 141, at 61 (stating that participation in high quality pre-kindergarten programs has been associated with a wide range of positive outcomes including “character building, higher attentiveness, and stronger executive functioning skills”); Ryan, *supra* note 1, at 50.

156. Duncan & Magnuson, *supra* note 18, at 110.

especially well documented. Launched in 1962 by a team of researchers and educators interested in improving the life outcomes of disadvantaged children, the experiment included a group of 123 low-income black children living in Ypsilanti, Michigan.¹⁵⁷ Roughly half of these children were assigned at random to a treatment group that received two-and-a-half hours of preschool each day with weekly home visits,¹⁵⁸ and the other half to a control group that received no preschool.¹⁵⁹ The program ran from 1962 until 1967 and provided treatment group members one or two years of preschool with an emphasis on developmentally appropriate experiential learning.¹⁶⁰ Program staff collected several waves of follow-up data until the participants in each group reached the age of forty.¹⁶¹ This exceptionally comprehensive research design has generated a wealth of data revealing the potential benefits of early childhood education, and Perry has therefore become one of the most influential early childhood education programs of all time.

Research on the earliest waves of program data found a number of extraordinary outcomes, including substantial gains in IQ when Perry Program participants began school. Although many of these specific gains appeared to evaporate by the time students were retested in third grade,¹⁶² program participants still

157. SCHWEINHART ET AL., *supra* note 146, at 1.

158. *Id.*; James J. Heckman, *Effective Child Development Strategies*, in W. STEVEN BARNETT, WALTER S. GILLIAM, & EDWARD ZIGLER, *THE PRE-K DEBATES: CURRENT CONTROVERSIES AND ISSUES* 2, 6 (2011).

159. SCHWEINHART ET AL., *supra* note 146, at 1; MARY HOHMANN & DAVID P. WEIKART, *EDUCATING YOUNG CHILDREN: ACTIVE LEARNING PRACTICES FOR PRESCHOOL AND CHILD CARE PROGRAMS* 4 (1995).

160. SCHWEINHART ET AL., *supra* note 146, at 1; Duncan & Magnuson, *supra* note 18, at 116. Program staff encouraged students to initiate and engage in experiential play activities that would enable them to develop and demonstrate social, problem-solving, and intellectual skills. *Id.*

161. SCHWEINHART ET AL., *supra* note 146, at 1.

162. See James Heckman et al., *Understanding the Mechanisms Through Which an Influential Early Childhood Program Boosted Adult Outcomes*, 103 AM. ECON. REV. 2052, 2053 (2013) (“Although the program initially boosted the IQs of participants, this effect soon faded. A few years after the program finished, there was no statistically significant difference in IQ between treatments and controls for males and only a borderline statistically significant difference for females.”). Similar “fadeout” effects have been found with respect to gains in other programs. See, e.g., Duncan & Magnuson, *supra* note 18, at 117 (discussing research on Head Start that found evidence of complete fadeout by

enjoyed a wide variety of long-term gains. They completed more years of schooling,¹⁶³ reported greater monthly earnings and employment,¹⁶⁴ were more likely to own their own homes,¹⁶⁵ had been arrested fewer times,¹⁶⁶ and received less welfare assistance as adults.¹⁶⁷

Research on the federal government's Head Start program also makes clear the substantial long-term benefits of high-quality early childhood care. Head Start has served tens of millions of children¹⁶⁸ (it currently serves one million children)¹⁶⁹ throughout the United States. Created in 1965 to provide educational enrichment opportunities and health and social services to poor children and their families, Head Start focuses in particular on increasing the school readiness of children from low-income households.¹⁷⁰ Studies consistently have found short-term gains in many academic areas for preschool-aged participants.¹⁷¹ Although much of this academic

the end of the first grade); Susan Dynarski et al., *Experimental Evidence on the Effect of Childhood Investments on Postsecondary Attainment and Degree Completion*, 32 J. POL. ANALYSIS & MGMT. 692, 711-12 (2013); Hill et al., *supra* note 141, at 67, 75 (finding that gains from Tulsa's pre-kindergarten program on reading and math scores had vanished by third grade for one cohort, and that gains relating to reading scores had faded away for a later cohort).

163. Lawrence J. Schweinhart, *Benefits, Costs, and Explanation of the High/Scope Perry Preschool Program* 4 (Apr. 26, 2003) (unpublished manuscript), http://www.highscope.org/file/Research/PerryProject/Perry-SRCD_2003.pdf [<https://perma.cc/3LX2-QEYY>].

164. *Id.* at 5.

165. *Id.*

166. *Id.*

167. *Id.*

168. See U.S. Dep't of Health & Human Servs., *Head Start Program Facts Fiscal Year 2015*, HEAD START, <https://eclkc.ohs.acf.hhs.gov/hslc/data/factsheets/2015-hs-program-factsheet.html> [<https://perma.cc/C3BD-VD3H>].

169. *Id.*

170. See *id.*; NICHOLAS ZILL ET AL., HEAD START FACES 2000: A WHOLE-CHILD PERSPECTIVE ON PROGRAM PERFORMANCE 2 (2003) (explaining that school readiness is "the ultimate goal" of Head Start). With some exceptions, participating students must come from households below the poverty line. *Id.* at 96-97.

171. Eliana Garces et al., *Longer-Term Effects of Head Start*, 92 AM. ECON. REV. 999, 999-1003 (2002) (finding that Head Start participation produced higher verbal and reading achievement scores compared to non-participant siblings); Marianne P. Bitler et al., *Experimental Evidence on Distributional Effects of Head Start* 32 (Nov. 2, 2015) (unpublished manuscript), <https://business.illinois.edu/finance/wp-content/uploads/sites/46/2015/08/hilary-hoynes-paper.pdf> [<https://perma.cc/24H6-7SAG>]. Children who enrolled as four-year-olds significantly outperformed the control group of

improvement seems to disappear early in elementary school,¹⁷² recent longitudinal studies have found evidence of other important long-term gains.¹⁷³ By adulthood, Head Start enrollees report greater educational attainment, improved employment outcomes, and reduced criminal activity relative to similarly situated non-enrollees.¹⁷⁴ Utilizing data from the National Longitudinal Survey of Youth, education researcher David Deming found that children who attended Head Start were more likely to graduate from high school than their non-attending siblings,¹⁷⁵ and that Head Start participation increased college attendance by six percentage points.¹⁷⁶ These program effects were especially pronounced for the most disadvantaged children.¹⁷⁷ All told, the benefits that Deming discerned were approximately eighty percent the size of those from the (smaller and more expensive) Perry program,¹⁷⁸ and large enough to account for a third of the gap between children in the poorest quartile of American households and those at the median.¹⁷⁹ In a

children who lost the enrollment lotteries in a number of language and literacy-related areas. MICHAEL PUMA ET AL., HEAD START IMPACT STUDY: FINAL REPORT, at xvi (2010), https://www.acf.hhs.gov/sites/default/files/opre/hs_impact_study_final.pdf. [https://perma.cc/DG28-YPVE]. Four-year-olds with one year in Head Start's academic program showed superior outcomes across numerous language and literacy measures. See MICHAEL PUMA ET AL., THIRD GRADE FOLLOW-UP TO THE HEAD START IMPACT STUDY: FINAL REPORT, at xxi-xxxiii (2012), https://www.acf.hhs.gov/sites/default/files/opre/head_start_report.pdf [https://perma.cc/5LNE-L9E3]. Three-year-old enrollees also experienced gains in these areas, as well as several others including math, hyperactive and withdrawn behavior, and overall health. *Id.* They also benefited from improved parenting practices including more reading and less spanking. *Id.* at xxxi-xxxiii.

172. See PUMA ET AL., *supra* note 171, at xvi.

173. See, e.g., David Deming, *Early Childhood Intervention and Life-Cycle Skill Development: Evidence from Head Start*, 1 AM. ECON. J.: APPLIED ECON. 111, 112, 114, 130 (2009); Jens Ludwig & Douglas L. Miller, *Does Head Start Improve Children's Life Chances? Evidence from a Regression Discontinuity Design*, 122 Q. J. ECON. 159, 161, 189, 193, 199-200 (2007) (finding that Head Start led to higher high school graduation rates even though its test score effects faded out by the third grade).

174. Deming, *supra* note 173, at 114, 126-27.

175. *Id.* at 126-27.

176. *Id.* at 126.

177. *Id.* at 113; see also Bitler et al., *supra* note 171, at 32 (finding the most substantial gains for the lowest achieving students and those with the lowest cognitive baselines).

178. Deming, *supra* note 173, at 112.

179. *Id.*

similar longitudinal study using data from the Panel Study of Income Dynamics, a research team led by economist Eliana Garces also found that Head Start participation improved a number of important long-term educational outcomes.¹⁸⁰ These programs have also demonstrated that high-quality programs with evidence-based curricula can improve children's critically important executive function and self-regulation competencies.¹⁸¹

Another growing body of recent research has found that several state-funded preschool programs have improved educational outcomes for disadvantaged children. In 2008, education professor Vivian Wong and a team of researchers examined data from five states known to have high-performing public pre-kindergarten programs,¹⁸² and found that participants in certain states demonstrated significant academic gains in

180. Garces et al., *supra* note 171, at 1003, 1010-11.

181. In recent years, a number of Head Start-based studies have found that Head Start-based pilot programs tailored at targeting self-regulation skills can boost students' executive function skills. *See, e.g.*, Bierman et al., *supra* note 56, at 141 (identifying "dialogic reading programs, which encourage teachers to read interactively and engage children in discussions about the story," and "the use of carefully sequenced learning activities" as providing enhanced learning outcomes for preschool students, some of which may persist into elementary school); Diamond et al., *supra* note 44, at 1387-88 (finding statistically and socially significant gains in executive function skills for children involved in preschool using "Tools of the Mind" curriculum); Celene E. Domitrovich et al., *Improving Young Children's Social and Emotional Competence: A Randomized Trial of the Preschool "PATHS" Curriculum*, 28 J. PRIMARY PREVENTION 67, 82-83 (2007) ("The results of this randomized clinical trial of the Preschool PATHS program suggest that Head Start teachers can effectively deliver a universal social-emotional curriculum and improve children's emotional knowledge, self-regulation, social interaction level and social skills in less than one preschool year."); *id.* at 83 ("Intervention effects were found on key emotion knowledge skills targeted by the intervention. Both teachers and parents reported improvements in children's social-emotional competence."); Schmitt et al., *supra* note 46, at 21-22 (discussing gains brought through the Kids in Transition to School Program (KITS), Tools of the Mind program, Promoting Alternative Thinking Strategies (PATHS) curriculum, and the Chicago School Readiness Project (CSRP)). Findings from the recent studies, though still preliminary, suggest that such curricular efforts, if targeted at at-risk students, may provide substantial long-term benefits for students and taxpayers alike. *Id.*; *see also* Diamond et al., *supra* note 44, at 1388 ("We hypothesize that improving EFs early may have increasing benefits over time and may reduce needs for costly special education, societal costs from unregulated antisocial behavior, and the number of diagnoses of EF disorders.").

182. Vivian C. Wong et al., *An Effectiveness-Based Evaluation of Five State Pre-Kindergarten Programs*, 27 J. POL'Y ANALYSIS & MGMT. 122, 125 (2008). The states were Michigan, New Jersey, Oklahoma, South Carolina, and West Virginia. *Id.*

math,¹⁸³ print awareness,¹⁸⁴ and receptive vocabulary.¹⁸⁵ Economist Helen Ladd evaluated data from two North Carolina programs¹⁸⁶ and found “substantial positive effects” from each of these programs on third-grade math and reading scores,¹⁸⁷ with a combined effect of approximately four months of additional reading instruction and two months of additional math.¹⁸⁸ Consistent with the research on Head Start, Ladd and her collaborators found larger gains for the most disadvantaged children.¹⁸⁹ In light of these and other gains, Ladd and her team concluded that the programs were “cost-beneficial investments” for the state of North Carolina.¹⁹⁰

A rigorous study of Oklahoma’s universal public preschool policy also generated highly favorable findings.¹⁹¹ Public policy professor William Gormley and his colleagues compared the performance of Tulsa students enrolled in the state’s pre-kindergarten program to both non-enrollees and to children enrolled in a local Head Start program,¹⁹² and found that the Tulsa pre-kindergarten program “sharply improved students’ cognitive [and academic] development.”¹⁹³ They also performed a more targeted analysis examining the outcomes of students whose families earned less than 130% of the poverty line and found that disadvantaged students of color experienced greater school readiness gains in the state pre-kindergarten program

183. *Id.* at 145 (Michigan and New Jersey).

184. *Id.* at 145-46 (Michigan, New Jersey, South Carolina, and West Virginia).

185. *Id.* (New Jersey and Oklahoma).

186. These programs were the Smart Start Initiative, a comprehensive effort to promote health and school readiness in children younger than five years old, and the More at Four Program, a preschool program designed to enhance the academic skills of low income four-year-olds. See Helen F. Ladd et al., *From Birth to School: Early Childhood Initiatives and Third-Grade Outcomes in North Carolina*, 33 J. POL’Y ANALYSIS & MGMT. 162, 163, 167-171 (2014).

187. *Id.* at 165.

188. *Id.*

189. *Id.* (“[T]he effects are somewhat larger for children whose mothers have less than a high school education compared to those whose mothers have more education.”).

190. *Id.*

191. William T. Gormley, Jr. et al., *The Early Years: Preschool Programs Can Boost School Readiness*, 320 SCI. 1723, 1723 (2008).

192. *Id.*

193. *Id.* at 1724.

than the Head Start program.¹⁹⁴ In describing the magnitude of the program's effects, Gormley and his coauthors explained that participation was "a more powerful predictor of prereading and prewriting test score outcomes than gender, race and/or ethnicity, free lunch eligibility, mother's education, or whether the biological father lives at home."¹⁹⁵ Gormley also found that the program greatly enhanced participants' socio-emotional skills.¹⁹⁶ Though it will take some time before a clear picture emerges of the ultimate value of this program,¹⁹⁷ these impressive short-term findings suggest that high-quality public preschool offerings carry great potential to provide disadvantaged children more meaningful educational opportunities.

The above research reveals how high-quality pre-kindergarten programs might help disrupt inter-generational cycles of lifelong poverty and inequality. The improved short- and long-term outcomes made possible by these interventions merit the attention of judges and legislatures working to ensure disadvantaged children access to adequate educational opportunities. But notwithstanding these great potential benefits, the empirical research on early childhood development suggests that waiting even until children reach the traditional preschool age to provide them enrichment services and support bears significant social costs. The research suggests instead that

194. *Id.*

195. *Id.*

196. See William T. Gormley, Jr. et al., *Social-Emotional Effects of Early Childhood Education Programs in Tulsa*, 82 CHILD DEV. 2095, 2106 (2011) ("It is evident that . . . the good instruction and supportive emotional environments that characterize Tulsa's school-based pre-K classrooms are producing important advancements in social-emotional development.").

197. See Ladd et al., *supra* note 186, at 166 (identifying the focus on very short-term outcomes as a key limitation in research on early childhood education in Oklahoma). The overreliance (by necessity) on short-term testing measures of program value has been noted by many proponents of early childhood education, including economist Jim Heckman. See James J. Heckman & Tim Kautz, *Fostering and Measuring Skills: Interventions That Improve Character and Cognition* 8 (Nov. 2013) (unpublished manuscript), <http://www.nber.org/papers/w19656.pdf> [<https://perma.cc/6D2Y-MDMS>] ("Most evaluations of interventions have only short-term follow-ups."); Deming, *supra* note 173, at 112 ("[W]ithout some sense of the connection between short- and long-term benefits, researchers must wait at least 15–20 years to evaluate the effect of an early childhood program.").

poor children benefit more when they receive sustained services over a greater period of time.¹⁹⁸ Therefore, courts should also direct legislatures to develop initiatives geared toward even younger children, to help ensure that disadvantaged infants and toddlers enjoy the benefits of high-quality parental care and caregiving environments. Though efforts to pursue these more ambitious and far-reaching remedies will likely face even greater challenges than attempts to expand state-funded preschool, this Article advocates for these programs in order to further expand the legal discourse on educational opportunity and judicial remedies. The following section reviews evidence demonstrating the effectiveness of certain existing programs that provide services for infants, toddlers, and their families.

B. The Value of Programs for Infants, Toddlers, and Their Families

A number of studies from the past decade have identified positive associations between high quality child-care for very young children and positive long-term educational outcomes. Using data from a longitudinal study of 1,364 children launched by the National Institute of Child Health and Development (NICHD),¹⁹⁹ a team of researchers found that children who received high-quality child care as infants and toddlers already demonstrated greater cognitive development at two years of age.²⁰⁰ In analyzing a later wave of NICHD longitudinal data,

198. See, e.g., Yazejian et al., *supra* note 20, at 24 (finding that low-income children “should benefit most when they enter high-quality care at a younger age and remain in high-quality care for longer periods of time.”); *id.* at 37 (“Clearly, more than one year of EEC programming is better, and this study suggests that having 3 years of high-quality EEC experience has effects, whether children enter at age 1 or 2.”); Weilin Li et al., *Timing of High-Quality Child Care and Cognitive, Language, and Preacademic Development*, 49 DEVELOPMENTAL PSYCHOL. 1440, 1449 (2012) (explaining that children who receive high-quality care during both infancy and preschool exhibited the highest level of school readiness skills).

199. See Nat’l Inst. of Health, *Study Overview*, NAT’L INST. CHILD HEALTH & HUM. DEV., <https://www.nichd.nih.gov/research/supported/seccyd/Pages/overview.aspx> [<https://perma.cc/75C5-7CHF>].

200. Li et al., *supra* note 198. Child care quality during children’s preschool years was associated with higher language, reading, and math scores on the Woodcock-Johnson Cognitive and Achievement Batteries. See *id.* at 10. But see Nat’l Inst. of Child Health & Human Dev. Early Child Care Research Network, *The Relation of Child Care to Cognitive*

another group of researchers found evidence suggesting that having early childhood care “appeared to protect children in low-income families, promoting their reading and mathematics achievement through middle childhood.”²⁰¹ They noted that greater exposure to high-quality care disrupted the association between some measures of family disadvantage and academic outcomes by middle-childhood.²⁰² Using data from a still later wave of this study, Deborah Vandell and her colleagues uncovered even more remarkable evidence of the enduring effects of high-quality early childhood care. They found that the boost in cognitive-academic achievement that children received from having attended a high-quality child-care center²⁰³ remained just as large at fifteen years of age as it had been when measured at four and a half.²⁰⁴ Like several other studies,²⁰⁵ Vandell and her team found that these programs were especially beneficial for the most disadvantaged children.²⁰⁶

Programs that deliver high-quality very early childhood care have used both center-based care and home visitation models. The remainder of this section addresses these two program models in turn. Courts and legislatures interested in

and Language Development, 71 CHILD DEV. 960, 976 (2000) (finding no evidence that increased time in high-quality child care led to greater cognitive or linguistic gains).

201. See Eric Dearing et al., *Does Higher Quality Early Child Care Promote Low-Income Children's Math and Reading Achievement in Middle Childhood?*, 80 CHILD DEV. 1329, 1344 (2009).

202. *Id.*

203. For this ambitious experiment, researchers periodically visited the child care sites of participating students and coded them according to a standardized scale of child care quality. Deborah Lowe Vandell et al., *Do Effects of Early Child Care Extend to Age 15 Years? Results from the NICHD Study of Early Child Care and Youth Development*, 81 CHILD DEV. 737, 742 (2010).

204. *Id.* at 750.

205. See, e.g., Susanna Loeb et al., *How Much is Too Much? The Influence of Preschool Centers on Children's Social and Cognitive Development*, 26 ECON. EDUC. REV. 52, 65 (2007) (concluding that “while half day programs may be beneficial for children from higher-income families, full day programs better serve children from lower-income families, allowing them to gain pre-reading and math skills without detriment to social behavior.”).

206. See Vandell et al., *supra* note 203, at 739 (describing early child care as “a protective factor of familial social risk (measured by maternal education, family income, household size, and maternal depression) in terms of academic achievement in elementary school.”).

improving the academic and life outcomes of poor children should take both approaches into consideration.

1. *Center-Based Care*

Much of the existing research on center-based care for very young children has focused on the small but influential Carolina Abecedarian Project. Started in Chapel Hill, North Carolina in 1972, the program enrolled a total of fifty-seven low-income, predominantly black infants over the course of four annual cohorts.²⁰⁷ Participants joined this program very early in life, enrolling on average, at four months of age, and were eligible to participate until they were five years old.²⁰⁸ The program featured very low student-teacher ratios,²⁰⁹ offered free transportation,²¹⁰ and provided children and their families an intensive (and expensive) array of educational and social services.

The Abecedarian experiment yielded remarkable results. Human development researcher Craig T. Ramey and his team found that even compared to the control group students who themselves received healthcare, nutrition supplements, and other support services, participants—particularly those deemed most at-risk²¹¹—exhibited significant increases on IQ scores and both

207. Craig T. Ramey et al., *Persistent Effects of Early Childhood Education on High-Risk Children and Their Mothers*, 4 APPLIED DEVELOPMENTAL SCI. 2, 3 (2000). Fifty-four other children were assigned to a preschool control group, for purposes of the experiment. *Id.*

208. *Carolina Abecedarian Project*, CHILD TRENDS (Dec. 16, 2010), <https://www.childtrends.org/programs/carolina-abecedarian-project/> [<https://perma.cc/R2JX-G3R8>]. The Abecedarian project also included a kindergarten through second grade component made available for half of the members in the experiment group. Ramey et al., *supra* note 207, at 6-8. Students who participated in this group without participating in the early childhood program, experienced lower achievement gains at age twelve than those who had enrolled in the preschool program, and these gains appeared to dissipate by the time they were retested at age fifteen. *See id.* at 9; *id.* at 10 (noting that participation in the K-2 Program did not have impact on grade retention by age fifteen).

209. LEONARD N. MASSE & W. STEVEN BARNETT, NAT'L INST. FOR EARLY EDUC. RESEARCH, A BENEFIT COST ANALYSIS OF THE ABECEDARIAN EARLY CHILDHOOD INTERVENTION 4 (2002) (reporting that the ratios were 3:1 for toddlers and 6:1 for preschoolers).

210. *Id.*

211. *See* Ramey et al., *supra* note 207, at 5-6.

verbal and quantitative achievement tests.²¹² At age twenty-one, the members of the experimental group had higher IQ scores, had attained more overall years of schooling (they entered college at more than twice the rate of children in the control group),²¹³ and worked in higher skilled occupations.²¹⁴ Other center-based programs also have generated significant gains.²¹⁵

2. Home-Visitation Programs

Other programs have demonstrated success in enhancing the school-readiness and long-term life chances of very young children through the use of home visitations by trained professionals. Home visitation-based programs generally aim to improve child outcomes indirectly,²¹⁶ by providing information and support to help parents implement development-enhancing caregiving practices.²¹⁷ Instead of simply providing high-quality care to children, these programs aim to empower poor mothers to optimize their own caregiving strategies. The role and responsibilities of home service providers in these programs are fluid and varied depending on the particular needs of individual families. Home visitors have been described as serving families

212. *Id.* at 5 (“The IQs of preschool treatment group children ranged from 8 to 20 points higher than those of control children when maternal mental retardation and home environment . . . were statistically accounted for.”). The program also improved educational outcomes for the teenage mothers of children involved in the program. *Id.* at 11 (finding that juvenile mothers of children in the experiment group were substantially more likely to attain higher education than the mothers of students in the non-education-intervention control group); Frances A. Campbell et al., *Early Childhood Education: Young Adult Outcomes from the Abecedarian Project*, 6 APPLIED DEVELOPMENTAL SCI. 42, 48-52 (2002) (finding that mothers of the experimental group found higher skilled employment, had greater score gains on the Broad Mathematics and Broad Reading tests, had higher IQ scores, and had significantly fewer additional children).

213. *See id.*

214. *Id.* at 51.

215. *See* Ruzek et al., *supra* note 148, at 13 (“Experimental studies . . . find that at 36 months, children’s cognitive skills are enhanced by high-quality child care, with effect sizes ranging from $d = .12$ in the Early Head Start Study to $d = .83$ in the Infant Health and Development Program to $d = 1.23$ in the Abecedarian study.”).

216. Kimberly S. Howard & Jeanne Brooks-Gunn, *The Role of Home-Visiting Programs in Preventing Child Abuse and Neglect*, 19 FUTURE CHILD. 119, 120 (2009).

217. *See id.* These programs often focus primarily on addressing more immediately urgent matters of child health, abuse, and neglect, with school readiness and long-term educational objectives distant secondary outcomes of interest. *Id.*

in a number of capacities, including as “literacy teachers, parenting coaches, role models, and experts on topics related to parent and child health and well-being.”²¹⁸

Researchers have found evidence that certain home visitation programs successfully further the long-term development and well-being of at-risk children.²¹⁹ One program in particular, the Nurse-Family Partnership (NFP), has consistently demonstrated impressive results. NFP uses trained nurses to visit mothers from the eighth month of pregnancy through to the child’s second birthday.²²⁰ Initially concentrating on fetal health, when the child is born the program’s focus expands “to encompass infant growth and development, educational play, bonding and communicating with her child, and the mother’s life-course planning.”²²¹ Randomized trials conducted at NFP sites in three states have produced a number of encouraging results. Unmarried teen mothers who received regular home visits from trained nurses provided their children more developmentally beneficial play materials, exhibited less harsh parenting practices, and were less likely to abuse or neglect their children than mothers in the control group.²²² Mothers also were appraised as providing developmentally advantageous home environments when their children were thirty-four and forty-six months old.²²³ Some of the gains made

218. *Id.* at 121.

219. *Id.* at 120 (“The results of several meta-analyses suggest that home-visiting programs do have positive effects for participants.”). It is worth noting, however, that earlier studies frequently found less impressive gains. See Deanna S. Gomby et al., *Home Visiting: Recent Program Evaluations: Analysis and Recommendations*, 9 FUTURE CHILD. 4, 24 (1999).

220. See David L. Olds, *The Nurse-Family Partnership: An Evidence-Based Preventive Intervention*, 27 INFANT MENTAL HEALTH J. 5, 9 (2006) (describing the Nurse-Family Partnership as “a program of prenatal and early childhood home visitation by nurses as a means of improving parental behaviors and environmental conditions early in the life cycle in an effort to prevent these maternal and child health problems.”); see also Katy Dawley et al., *The Nurse-Family Partnership*, 107 AM. J. NURSING 60, 62, (2007).

221. Christine Kurtz Landy, et al., *Mothers’ Experiences in the Nurse-Family Partnership Program: A Qualitative Case Study*, BMC NURSING, Sept. 2012, at 2, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3499440/pdf/1472-6955-11-15.pdf> [<https://perma.cc/37PH-PFFA>].

222. *Id.* at 16.

223. *Id.*

possible by the program were still evident a full fifteen years later, in a follow-up study.²²⁴

The research on existing home visitation programs offers a few lessons that should inform judicial and legislative efforts to develop early childhood initiatives. On balance, programs that use nurses to make home visits seem to be significantly more successful than those that rely upon trained civilians.²²⁵ One randomized experimental study found that registered nurses appeared better able to convince young mothers to remain in these programs and to attempt to implement the information being provided.²²⁶ Programs that provide families a greater number of home visits tend to be most effective, and families who receive the most intensive attention benefit the most.²²⁷ The research suggests that states will achieve better results by focusing on first-time mothers, who may be more open to guidance about parenting than women who have already developed habits and beliefs about parenting through first-hand experience raising previous children.²²⁸ Though some home visitation programs have at times been hard to evaluate, due to measurement issues²²⁹ and great variation in program designs,²³⁰

224. *Id.* at 17.

225. See Kim Dalziel & Leonie Segal, *Home Visiting Programmes for the Prevention of Child Maltreatment: Cost-Effectiveness of 33 Programmes*, 97 ARCHIVES DISEASE CHILDHOOD 787, 794 (2012) (finding that all but one of the seven programs found to generate the most cost-effective benefits utilized professional service providers for visitations); David L. Olds et al., *Programs for Parents of Infants and Toddlers: Recent Evidence from Randomized Trials*, 48 J. CHILD PSYCHOL. & PSYCHIATRY 355, 383 (2007).

226. See Jon Korfmacher et al., *Differences in Program Implementation Between Nurses and Paraprofessionals Providing Home Visits During Pregnancy and Infancy: A Randomized Trial*, 89 AM. J. PUB. HEALTH 1847, 1848-49 (1999).

227. Howard & Brooks-Gunn, *supra* note 216, at 137. In their review of research on home visitation programs, Howard and Brooks-Gunn suggest that the results of many programs may be undermined by the fact that many participants end up receiving little or no treatment. *Id.*

228. Dalziel & Segal, *supra* note 225 (“All except two [of the seven programs] enrolled largely [in some instances, exclusively] first time mothers.”); Olds et al., *supra* note 225 (“The nurse home visiting programs with the strongest evidentiary foundations are those that focus on at-risk pregnant women having no previous live births and parents in at least the first year after delivery.”).

229. Many of these interventions have aimed to reduce child abuse and neglect. Because these problems are notoriously underreported and difficult to ascertain, it can be difficult to develop reliable measures of progress made in these areas. See Howard & Brooks-Gunn, *supra* note 216, at 128 (“[A]ssessing the prevalence of child abuse and

the logic underlying these programs—that equipping high-need parents with greater information and support can lead to improved child outcomes—is unimpeachable. In developing additional programs for very young children and their families, states will have the opportunity to run carefully designed experiments using different delivery methods and substantive curricula to broaden and deepen our understanding of the impact of particular program features.

Despite voluminous bodies of research on both the long-term significance of early childhood development and the potential effectiveness of particular early childhood interventions in improving the educational trajectories of disadvantaged children, there are a number of reasonable objections and concerns that might lead some critics to oppose the use of early education remedies in school finance litigation. The following section identifies and addresses some of the most likely objections to the remedies proposed in this Article.

C. Potential Objections and Concerns

Likely objections to these judicial remedies may center on questions of judicial competence, disagreement about the appropriate scope of state educational rights, concerns about feasibility, and questions about the long-term cost-effectiveness of these programs.

1. *Justiciability Issues*

A standard, continuing objection to active judicial involvement in adequacy litigation has been the argument that

neglect involves a number of difficulties, such as varying definitions, low reporting rates, and the difficulties of substantiating cases. As a result, research is generally weak in this area.”).

230. *See id.* (“Because these nine programs differed widely in their targets, method of service delivery, intensity, and content, it is not surprising that their outcomes also often differed substantially as well. The result is a body of research that is somewhat conflicted regarding essentially every outcome under study.”); Craig Winston LeCroy & Judy Krysik, *Randomized Trial of the Healthy Families Arizona Home Visiting Program*, 33 CHILD. & YOUTH SERV. REV. 1761, 1765 (2011) (“There are still too few rigorous trials of program models and measurement issues remain serious threats to understanding the capacity of programs to produce important outcomes.”).

state constitutional provisions, properly understood, are non-justiciable and instead fall within the sole province of state legislatures.²³¹ It is not the aim of this Article to adjudicate this doctrinal question of justiciability, which is best resolved according to the customs and precedents of individual courts. The proposals in this Article are only directed to those state courts that continue to treat educational adequacy claims brought under their state educational clauses as justiciable legal controversies. But even those courts that are unwilling to order early childhood remedies outright can still facilitate these reforms by advising legislatures to take them into full consideration and by extolling the virtues and value of these programs.

2. Disagreement About the Scope of Education Clauses

Many readers may regard these early childhood proposals as falling beyond the appropriate scope of state education clauses. This view would not be without judicial precedent. As explained above, the Arkansas and Wyoming Supreme Courts each interpreted age-specific language in their state constitutions' education clauses as prohibiting courts from ordering early childhood remedies in school finance litigation.²³² Courts in states without such language may reach similar conclusions by interpreting their education clauses as implicitly limiting the scope of judicial involvement to the traditional K-12 parameters of public education. Such readings would likely be consistent with popular, widely held understandings of the scope of public education. Recognizing the legitimacy of these restrictive interpretations of the constitutional text, this Article argues that it is neither logically inevitable nor normatively desirable. Given the mounting evidence demonstrating that early life experiences and inequalities fundamentally shape children's long-term educational careers and undermine the

231. See, e.g., West & Peterson, *supra* note 91, at 9-10.

232. Lake View Sch. Dist. No. 25 of Phillips Cty. v. Huckabee, 351 Ark. 31, 81, 91 S.W.3d 472, 501 (2002); Campbell Cty. Sch. Dist. v. State, 181 P.3d 43, 70 (Wyo. 2008).

effectiveness of later educational resources, there is a natural and logical relationship between early childhood and the ability of states to effectively provide poor children adequate educational opportunity in elementary and secondary school.

3. Questions About Cost-Effectiveness

Some critics may raise concerns about the long-term cost-effectiveness of early childhood programs as the research demonstrating pronounced fade-out effects in many programs may lead some to question whether these programs are worth the necessary political and financial capital. Fortunately, researchers have already addressed these concerns. In a recent report, the President's Council of Economic Advisors summarized the existing research on early childhood education as indicating that devoting greater resources to early childhood initiatives would provide societal benefits of approximately \$8.60 for each dollar spent.²³³ Even where specific academic gains appear to dissipate, the significant long-term benefits generated by certain programs continue to make them sound investments. For example, one widely reported analysis of the Perry Program estimated long-term benefits worth \$105,324 per participant.²³⁴ These long-term findings suggest that the

233. See EXEC. OFFICE OF THE PRESIDENT OF THE U.S., THE ECONOMICS OF EARLY CHILDHOOD INVESTMENTS 3 (2014), https://www.whitehouse.gov/sites/default/files/docs/early_childhood_report1.pdf [<https://perma.cc/4CQD-LDZF>].

234. Schweinhart, *supra* note 163, at 5. This estimate consists of:

\$68,584 saved by the potential victims of crimes never committed, based on the typical in-court and out-of-court settlements for such crimes; \$15,240 in reduced justice system costs; \$10,537 brought in by increased taxes paid by preschool-program participants because they had higher earnings; \$7,488 saved in schooling, due primarily to reduced need for special education services, and despite increased college costs for preschool-program participants; and \$3,475 in reduced welfare costs.

Id. Another analysis, using a more cautious methodological approach, estimated that the program offered a seven to ten percent rate of return. James J. Heckman et al., *A New Cost-Benefit and Rate of Return Analysis for the Perry Preschool Program: A Summary* 10 (Nat'l Bureau of Econ. Research, Working Paper No. 16180, 2010). There has been some debate, however, about the magnitude and uniformity of these findings. One researcher, for example, ran an analysis on program data and found significant long-term effects, but only for women who had participated in the program. Michael L. Anderson, *Multiple*

academic fadeout effects raise more questions about the usefulness of academic achievement scores as indicators of program benefits rather than the value of the programs themselves.²³⁵

Researchers have found that programs that begin even earlier in childhood also yield significant returns to investment over the long term, including an estimated \$160,000 per participating family in the Abecedarian program, at a cost of \$80,000 per child.²³⁶ Researchers examining data from the NFP's Elmira site also found that long-term benefits—including tax revenue generated from greater employment, decreases in public assistance, and reduced crime—exceeded the program's costs.²³⁷ These estimated long-term gains were most pronounced for the most vulnerable families,²³⁸ for whom each dollar spent yielded \$5.70 in savings and gains.²³⁹ Though these cost-benefit calculations vary substantially according to individual researchers' varying methods and assumptions, this research cumulatively suggests that well-designed public early

Inference and Gender Differences in the Effects of Early Intervention: A Reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects, 103 J. AM. STAT. ASS'N 1481, 1493 (2008). Heckman has criticized Anderson's findings as invalid. See Heckman et al., *supra* note 234, at 3.

235. See Hill et al., *supra* note 141, at 77 (explaining that "intervention effects may appear to fade out due to differences in performance measurement over time For example, tests . . . may reflect material that is unrelated to the earlier intervention or to other measures of long-term success.").

236. Duncan & Magnuson, *supra* note 18, at 117.

237. *Best Practice Fact Sheet: Strengthening Families, Nurse Family Partnerships (NFP)*, WASHINGTON WORKFIRST (Aug. 2010), [http://workfirst.wa.gov/reexam/reexamdocs/Nurse%20Family%20Partnerships\(7\).pdf](http://workfirst.wa.gov/reexam/reexamdocs/Nurse%20Family%20Partnerships(7).pdf) [<https://perma.cc/H3PM-N2CX>]. The studies were conducted by Lynn Karoly and colleagues at RAND, and Steve Aos at the Washington State Institute for Public Policy. *Id.*

238. As David Olds explained, "One of the clearest messages that has emerged from this program of research is that the functional and economic benefits of the nurse home-visitation program are greatest for families at greater risk." Olds, *supra* note 220, at 21.

239. *Best Practice Fact Sheet*, *supra* note 237; LYNN A. KAROLY ET AL., *INVESTING IN OUR CHILDREN: WHAT WE KNOW AND DON'T KNOW ABOUT THE COSTS AND BENEFITS OF EARLY CHILDHOOD INTERVENTIONS* xviii (1998) (concluding that the lifelong savings to government and society for serving the children of low-income, unmarried mothers exceeded costs by 4:1); see also STEVE AOS ET AL., *BENEFITS AND COSTS OF PREVENTION AND EARLY INTERVENTION PROGRAMS FOR YOUTH* 6 (2004) (finding that NFP delivered a \$17,000 return for every family serviced in a study conducted by the Washington State Institute for Public Policy).

childhood programs would be well worth the money. In the realm of education policy, where the relationships between particular expenditures and social benefits has often been hotly contested and notoriously difficult to pin down,²⁴⁰ the mounting collection of studies that have documented long-term gains from early childhood education are especially noteworthy and promising.

4. Feasibility Concerns

The considerable cost involved in making high-quality early childhood services available for poor children presents another legitimate potential ground for concern. High-quality early childhood care is expensive. By some estimates, providing adequate preschool to American children from low-income families would require an additional \$1.5 to \$3 billion in state spending.²⁴¹ The Nurse-Family Partnership program costs an estimated \$4,100 per family.²⁴² The costs in model programs have in some instances exceeded \$10,000 per child.²⁴³ Hence, the financial outlays and opportunity costs associated with reforms like the ones advocated for in this Article will undoubtedly be substantial, rendering this proposal a non-starter for many judges and legislatures.

This concern is an undeniably legitimate one, yet it need not be determinative. The history of school finance litigation suggests that where there is sufficient political will and judicial impetus, legislatures can devote substantial resources to shoring up their states' educational systems. Education reforms implemented in New Jersey in response to judicial findings of

240. See Ryan, *supra* note 1, at 77.

241. W. Steven Barnett & Kenneth B. Robin, *How Much Does Quality Preschool Cost?* 2 (2006) (unpublished manuscript) (on file with author), <http://www.educationjustice.org/assets/files/pdf/Resources/Pre-K/Policy%20Issues%20and%20News/How%20much%20does%20high%20quality%20preschool%20cost.pdf> [<https://perma.cc/G2SH-QTBY>].

242. U.S. Dep't of Health & Human Servs., *Implementing Nurse Family Partnership (NFP)*, HOME VISITING EVIDENCE EFFECTIVENESS, <http://homvee.acf.hhs.gov/Implementation/3/Nurse-Family-Partnership-NFP-/14/5/> [<https://perma.cc/2UTZ-S7AT>].

243. See Heckman et al., *supra* note 234, at 4 (estimating that the Perry Program cost more than \$17,000 per participant in 2006 dollars).

inadequate educational opportunity, for example, have rerouted billions of dollars to low-income districts. In the remedial phase of a long-standing lawsuit that invalidated New Jersey's school finance system under the "thorough and efficient"²⁴⁴ education clause of the state's constitution,²⁴⁵ the New Jersey Supreme Court affirmed the ruling of a lower court judge recommending that the state provide full-day pre-kindergarten for three- and four-year-old children living in selected high-needs "Abbott districts."²⁴⁶ Reflecting the high standards and rigorous requirements that New Jersey established,²⁴⁷ this program has been very expensive; as of 2016, New Jersey's annual preschool budget had risen to \$653 million.²⁴⁸ But although these costs have at times generated considerable political resistance,²⁴⁹ the New Jersey Supreme Court's willingness to demand early childhood remedies has already made possible considerable educational progress for many of the state's most disadvantaged children. Longitudinal data from the program has revealed positive results, including sizable gains on fifth grade math,

244. N.J. CONST. art. VIII, § 4, para. 1. The lawsuit also alleged that the funding disparities violated the equal protection clause of the New Jersey and United States Constitutions. See *Abbott v. Burke*, 575 A.2d 359, 363, 387 (N.J. 1990) (finding that the state's school finance system provided insufficient funding for a group of twenty-nine low-income school districts (the "Abbott districts")).

245. See *id.* at 363, 408. The Abbott litigation was initiated in 1981, when a group of students from a handful of high-poverty school districts alleged that inter-district funding disparities were so severe that it violated the "thorough and efficient" education clause of the state constitution. *Id.* at 363.

246. See *Abbott v. Burke*, 710 A.2d 450, 463-64 (N.J. 1998) (Abbott V). This ruling rejected a more modest proposal from the state to provide only a half-day pre-kindergarten program for four-year-olds. *Id.* at 464.

247. See *Abbott v. Burke*, 748 A.2d 82, 91 (N.J. 2000) (Abbott VI) (requiring suitable curricula, Bachelor's degrees, and specialized training for all primary teachers, maximum class sizes, and student-staff ratios). Abbott programs met nine of the ten standards used to assess preschool quality by the National Institute for Early Education Research. W. Steven Barnett, et al., *The State of Preschool 2006: State Preschool Yearbook*, NAT'L INST. FOR EARLY EDUC. RESEARCH 9 (2006), <http://nieer.org/wp-content/uploads/2016/10/2006yearbook.pdf> [<https://perma.cc/FMX4-7ZU2>].

248. See Adam Clark, *Why Public Pre-K Programs Could Die Under Christie Plan*, NJ.COM (Aug. 22, 2016, 5:22 PM), http://www.nj.com/education/2016/08/christie_preschool_nj_school_funding.html [<https://perma.cc/GF7U-LZ3P>]. Governor Chris Christie, who once compared the program to government babysitting, has recently attempted to cut the program's funding. *Id.*

249. See *id.*

science, and language achievement tests,²⁵⁰ and less frequent placement into special education classes.²⁵¹ Those who attended Abbott preschools for two years had higher test scores than those who attended for only one year.²⁵²

To the extent that courts and legislatures are not prepared to assume the full costs of early childhood remedies, they can at least begin to develop pilot programs that might bring the benefits of these programs to targeted groups of at-risk students. This more gradual approach to assuming greater responsibility for early childhood care may also have the benefits of demonstrating program effectiveness over time, offering opportunities to evaluate and improve program design, and influence norms accepting early education as a necessary corrective to address the social costs of excessive socioeconomic stratification. Courts and legislatures also may be able to minimize costs by using early education programs to replace less efficient uses of education dollars. There has been considerable scholarly disagreement concerning the value of several of the particular educational reforms and expenditures that are most commonly awarded in these cases. In light of the enormous promise and potential long-term benefits of early education remedies, states should critically review the existing research concerning the relative value of various other less critical expenditures.

V. CONCLUSION

The case for early childhood programs as remedies for inadequate educational opportunity is now more compelling than ever. Scores of scientific and social science studies over the past ten years have made increasingly clear the extent to

250. W. STEVEN BARNETT ET AL., NAT'L INST. FOR EARLY EDUC. RESEARCH, ABBOTT PRESCHOOL PROGRAM LONGITUDINAL EFFECTS STUDY: FIFTH GRADE FOLLOW-UP 16 (2013), <http://nieer.org/sites/nieer/files/APPLES%205th%20Grade.pdf> [<https://perma.cc/X2J4-Z6ZJ>].

251. *Id.*

252. *See id.* at 1, 16-20. In fact, the report explained that two years of participation in an Abbott preschool brought about gains sizeable enough to account for "20 to 40 percent of the [black-white] achievement gap." *Id.* at 1.

which differences in the quality of care and enrichment that children experience in their earliest years powerfully shape their future educational careers and thereby reinforce intergenerational cycles of inequality. Though early childhood programs that focus on providing children greater support and enrichment from birth through preschool are certainly no panacea for the multi-faceted problems that inhibit poor children from excelling academically, as partial solutions they are far more effective and efficient than remedies and reforms that focus strictly on elementary and secondary school.

If the past twenty-five years are any indicator of what to expect in the next quarter century, courts willing to take heed of this growing body of high quality research will have plenty of opportunities to apply it in future education litigation. The ongoing efforts of litigants and public interest groups to contest the legitimacy of their states' public school systems will continue to provide visionary state courts chances to push their states closer to the goal of high-quality early-childhood care for the most high-needs and at-risk children. The research suggests that their greater willingness to do so would provide substantial benefits not just to poor children and their families but also to society at large.

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