ENDING THE LOTTERY

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I. THE PROBLEM WE FACE

In the biography of Warren Buffet, titled *The Snowball*, Buffett contends that he won the "ovarian lottery" by being born in the United States.[1] There are multiple examples of interviews and presentations in which Mr. Buffett explains his notion of the ovarian lottery, dating back as far as 1997 stakeholders' meetings. In these presentations, Mr. Buffett invites members of the audience to imagine that they are about to be born, in 24 hours.[2] Being in that situation, he explains, you do not know whether you will be born black or white, male or female, in North America or Afghanistan.[3] You must, as all other beings on the brink of birth must do, draw a ticket at random.[4] That ticket will determine the situation into which you will be born, and so determine your future, as well as the futures of your children and your grandchildren.[5] This idea of the inescapable imposition of a random fate arises because so much is predicated on the conditions of one's birth: societal expectations associated with your race or gender; opportunities afforded or denied to you because of your nation of birth; constraints on behavior related to your culture or religion; and so on. Although provocative, this idea needs some amending, because the lottery does not begin at the time of birth, but much, much earlier.

In Mr. Buffett's version of the ovarian lottery, individuals are affected largely by factors related to gender, race, and place of birth.[6] However, the presence of a sensory, cognitive, or physical limitations can affect one's ability to reach his or her full potential, as well. Genetic influences can impose a variety of limitations that take effect either at the time of birth, or some years later. Many genetic syndromes arise from recessive transmission, meaning that both parents need to have copies of the same mutation in order for the disorder to be expressed in a child. Precisely because a specific syndrome is not expressed if only one parent carries a copy of the mutation, parents typically are unaware that they carry the genetic code for the disorder until its appearance in their offspring; it is

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1. ALICE SCHROEDER, THE SNOWBALL: WARREN BUFFETT AND THE BUSINESS OF LIFE 643 (Bantam Books 2008).

2. Joe Weisenthal, *We Love What Warren Buffett Says About Life, Luck, And Winning The 'Ovarian Lottery'*, BUS. INSIDER (Dec. 10, 2013, 5:04 AM), https://www.businessinsider.com/warren-buffett-on-the-ovarian-lottery-2013-12.

3. *Id*.

4. *Id*.

5. *Id*.

6. *Id*.

by chance that both parents would share a single mutation. Thus, the ovarian lottery begins the moment two individuals become romantically involved.

While there is little that can be done concerning genetic bases of congenital defects, environmental sources of disorder are another story. Environmental influences experienced while in utero can have lifelong effects on a developing fetus. Cigarette smoke during pregnancy can decrease oxygen supply to an unborn child, thus interfering with development. Other potential causes of congenital defects include alcohol abuse during pregnancy, as well as some prescription and nonprescription drugs. Viruses that may not even be noticed by the mother can inflict permanent consequences for the developing fetus. For example, the rubella virus may present little in the way of a health threat to the mother, because of her mature immune system. Infection may even go unnoticed.[7] However, if the virus is encountered early in a pregnancy, it can be transmitted to the fetus through the placenta, causing deafness, blindness, or cardiac disorders.[8] Although the rubella virus has been largely eradicated in the developed world due to effective vaccines, it still accounts for many congenital defects in much of the undeveloped or developing world.[9] Cytomegalovirus behaves similarly to the rubella virus, and no vaccine currently exists to prevent its transmission.[10] Other infections can similarly affect the developing fetus, leading to lifelong complications that place an individual on the losing end of the ovarian lottery. Thus, from the very beginning, infants face widely different challenges.

Once born, external factors continue to influence a child's ability to grow optimally. Much of the development of an organism is pre-programmed in a sense, by the genetic code endowed to the individual. That code largely determines when an individual will reach puberty or stop growing. Our genetic makeup even regulates when the aging process will begin and how it will progress, which explains individual patterns of aging. Nonetheless, environmental factors serve either to facilitate the optimal unfolding of genetic programs related to development, or to hinder that developmental unfolding. The influences of these environmental factors are time sensitive: an individual must get appropriate environmental inputs at specific times in order for certain developmental changes to occur optimally. For the same reason, toxic elements can impose maximum deleterious consequences only at certain

7. *Pregnancy and Rubella*, CTRS. FOR DISEASE CONTROL & PREVENTION (Sept. 15, 2017), https://www.cdc.gov/rubella/pregnancy.html.

8. *Id*.

9. *Id*.

10. *About CMV*, CTRS. FOR DISEASE CONTROL & PREVENTION (Aug. 2, 2018), https://www.cdc.gov/cmv/overview.html.

developmental stages. An example of this last effect is provided by the work of a group of scientists at New York University who have developed methods for artificially creating mild-to-moderate hearing impairments in laboratory gerbils by plugging their ears.[11] The amount of attenuation created by this method is similar to that created when a child has chronic ear infections, or otitis media.[12] For the gerbils, this hearing loss is restricted to 24 days in length, then it is resolved simply by removing the ear plugs.[13] These investigators have demonstrated that transient hearing losses impose no long-term threats to hearing sensitivity itself; once the plugs are removed, the gerbils' auditory thresholds return to normal levels. Transmission of sound to the primary auditory cortex and operation of that cortical region are identical to that observed in gerbils not receiving ear plugs. Thus, the peripheral system is not permanently damaged. However, if these transient hearing losses are imposed while the central nervous system is still developing, permanent impairment is found to result in brain regions critical to mediating movement control, as well as executive functions such as attention and planning.[14] For humans this finding suggests that these and similar transient deficits could lead to the later, gradual emergence of disorders such as attention deficit disorder or autism. Thus, it is essential that appropriate environmental inputs be provided during sensitive periods, and toxic inputs be avoided. If it proves impossible to prohibit exposure to toxic factors, then appropriate and adequate treatments need to be delivered to mitigate the deleterious consequences that could otherwise arise.

One of the most significant impacts on child development involves the socioeconomic status of the family into which the child is born; it can serve either to support the optimal unfolding of genetically programmed developmental changes, or act as a toxin. Socioeconomic status (SES) is traditionally indexed using two factors: one related to the educational level of the primary income earner in the family, and the other related to the status of the profession in which the primary income earner engages. While the first factor, educational level, is quite easy to quantify, the second, occupational status, can be more difficult to assess. The original SES index was developed by Hollingshead over the course of roughly a decade, with versions of this index published between 1957 and 1965.[15] In 1996, we—those of us working in my laboratory—developed a newer version of this index, largely because much had changed regarding occupations in the thirty years intervening since Hollingshead last

11. Todd M. Mowery et al., *The Sensory Striatum Is Permanently Impaired by Transient Developmental Deprivation*, 19 CELL REP. 2462, 2467 (2017).

12. *Id.* at 2462.

13. *Id*. at 2465.

14. *Id*. at 2462.

15. AUGUST B. HOLLINGSHEAD, THE TWO FACTOR INDEX OF SOCIAL POSITION (1957).

published his index. For example, in the Hollingshead version, some of the occupations included were hostler, oiler, porter, and shirt folder.[16] We removed those occupations deemed to be outdated, and added newer ones, such as dental hygienist, medical technician, and computer programmer.[17] According to this revision, both educational level and occupational status are coded along an eight-point scale, and the values multiplied together.[18] This results in a 64-point index.[19] Values below roughly 10 mark abject poverty; those around 20 indicate that the primary income earner is likely a skilled laborer, such as a plumber or carpenter; and scores in the 30s and 40s indicate college-educated professionals with jobs such as teachers and middle managers in business settings. Values above 50 are received by medical doctors, lawyers, and CEOs of large corporations.

Beginning in the 1960s, developmental psychologists have studied the effects of SES on cognitive and language outcomes. Some differences observed have been that by roughly three years of age, there is a significant difference in the sizes of children's vocabularies based on SES, with children from higher SES environments having larger vocabularies. For example, Hart and Risley followed 43 children who were categorized as being from low-SES, mid-SES, or high-SES family environments, based on the Hollingshead index.[20] By 36 months of age, the children in high-SES environments knew roughly twice as many words as the children in the low-SES environments.[21] Moreover, work by others has shown that it is not simply vocabulary that is affected: children from low-SES environments use less elaborate language forms than children from mid-SES environments, meaning that they do not incorporate very many adverbs or adjectives into their utterances, and provide few details in their verbal behavior.[22]

It turns out that these differences in language development can be explained primarily by the interaction styles parents use with their young children. In 1979, Schachter studied the interaction styles of mothers in low-SES and mid-SES families, being careful to include black and white

16. *Id*. at 7, 8.

17. Susan Nittrouer & Lisa T. Burton, *The Role of Early Language Experience in the Development of Speech Perception and Phonological Processing Abilities: Evidence from 5-year-olds with Histories of Otitis Media with Effusion and Low Socioeconomic Status*, 38 J. COMM. DISORDERS 29, 58 (2005).

18. *Id.*

19. *Id.* at 35.

20. BETTE HART & TODD R. RISLEY, MEANINGFUL DIFFERENCES IN THE EVERYDAY EXPERIENCE OF YOUNG AMERICAN CHILDREN (Paul H. Brookes Pub. Co. 1995).

21. *Id*. at 176.

22. BASIL BERNSTEIN, CLASS, CODES AND CONTROL: THEORETICAL STUDIES TOWARDS A SOCIOLOGY OF LANGUAGE 42 (Schocken Books 1975).

mothers in both groups.[23] No effect of race was observed, but mothers from low-SES families were observed to use mostly (in more than 50% of their interactions) directives with their children.[24] Directives are speech behaviors that involve telling another individual what to do or what not to do, with no expectation of a response. Mothers from the mid-SES families, on the other hand, were observed to engage in this kind of speech act only 30% of the time, on average.[25] Instead, their speech tended to be responsive, following up on something the child said, or tried to say.[26] These sorts of speech acts often involve recasts, in which the adult restates something the child said using more mature language structures, or extensions, in which the adult makes a statement that includes exactly what the child said, but makes it more complete. Because these longer and more complex utterances are essentially different versions of what the child just said, children are usually quite interested in the newer, enhanced forms. Consequently, they acquire these newly encountered language structures readily.

Another kind of speech act that has been found to be facilitative of language acquisition involves open-ended inquiries; that is, questions that require more than a *yes-no* or short answer response. In our laboratory, we examined the language interaction styles of parents from low-SES and mid-SES families.[27] Using our SES index, children in the low-SES families had scores below 15, while children in the mid-SES families had scores above 25. Annual income of the low-SES families was below $15,000 per year, while it was above $25,000 for the mid-SES families. We video-recorded each parent-child dyad for 10 minutes, while they worked together to build a Tinkertoy model from an illustration. During that 10-minute interaction, it was observed that children from the mid-SES environments heard an average of 12.2 open-ended inquiries, but children from the low-SES environments heard an average of only 3.6. That means that in just that 10-minute slice of time, children from the mid-SES environments were encouraged to generate language roughly 3.5 more times. That is 3.5 times the opportunity to practice constructing utterances and 3.5 times the opportunity to learn more mature structures by having those original utterances recast or expanded.

To be sure, the differences in language achievement associated with SES can be clearly traced to parental interaction styles, rather than to any

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23. FRANCES FUCHS SCHACHTER ET AL., EVERYDAY MOTHER TALK TO TODDLERS: EARLY INTERVENTION 13 (Acad. Press, Inc. 1979).

24. *Id.* at 15.

25. *Id.* at 63.

26. *Id.*

27. Susan Nittrouer & Lisa T. Burton, *The Role of Early Language Experience in the Development of Speech Perception and Language Processing Abilities in Children with Hearing Loss*, 103(1) VOLTA REV. 5 (2002).

other factor that may be related to SES. In particular, several investigations have demonstrated that the effects of poverty, or low SES, on children's language and cognitive development are similar, regardless of race or cultural background. For example, Laosa used the Tinkertoy task, in which parent and child are asked to build a Tinkertoy model together, in order to study parental interaction styles.[28] That study showed that regardless of race or ethnicity, children growing up in poverty received more impoverished parental language input. Norman-Jackson recruited low-SES black preschoolers who had siblings in the second grade and examined reading scores of these older children.[29] Norman-Jackson explicitly set out to find and recruit some low-SES preschoolers whose older siblings were performing well in school, in spite of expectations related to poverty. The preschool children were grouped according to whether the older sibling was performing within normal limits on the reading measure, or scoring below the average range.[30] Then both the language performance of the preschool children as well as language interaction styles of the parents were examined.[31] Children with "successful" older siblings produced language with a Mean Length of Utterance (MLU)—a common measure of language advance—of 3.87 compared to a MLU of just 2.88 for children with "unsuccessful" siblings.[32] Overall, more verbal interactions were observed between parents and preschoolers in the successful group than in the unsuccessful group.[33] Thus, SES is not the factor that accounts for these language differences, but rather learned behaviors on the part of parents who likely grew up in poverty, as well. This suggests that it is necessary to work with individual parents to modify patterns of interaction.

II. WHAT NEEDS TO BE DONE

The findings reviewed above demonstrate that children need the appropriate kinds of support at critical times in their lives in order to develop optimally, and achieve their full potential. In this section I contend that as a society, we have failed to provide support of an appropriate nature, at critical times, or in adequate dosage. The consequences of our failure to do so can be seen across many facets of our society. For example, analyses of our prison populations present stark evidence of our failure to intervene early and appropriately. Using data

28. Luis M. Laosa, *School, Occupation, Culture, and Family: The Impact of Parental Schooling on the Parent-Child Relationship*, 74 J. EDUC. PSYCHOL. 791, 818 (1982).

29. Jacquelyn Norman-Jackson, *Family Interactions, Language Development, and Primary Reading Achievement of Black Children in Families of Low Income*, 53 CHILD DEV. 349 (1982).

30. *Id*. at 354.

31. *Id.*

32. *Id.*

33. *Id.*

from the 2004 Bureau of Justice statics, Rabuy and Kopf estimated that the mean annual income (in 2014 dollars) of our incarcerated population prior to incarceration was $19,185, which is 41% less than that of non-incarcerated people of the same age.[34] Similarly, the mean level of educational attainment for incarcerated individuals, ages 27 to 42 years, is eleventh grade, while most non-incarcerated people matched on age have at least a high school diploma.[35] From these findings we can only conclude that being born poor and being deprived of the experiences early in life that foster development of the skills needed to flourish in our education system often places an individual on a path to behaviors that can land them in prison.

Turning our attention to individuals born with a disability that makes learning difficult, we find that 55% of young adults who were diagnosed with a learning disability while in school will be involved with the criminal justice system within eight years of leaving high school.[36] Where employment is concerned, only 46% of adults diagnosed with a learning disability as a child are able to find employment within eight years of leaving school; however, 67% of those individuals earn less than $25,000 per year.[37] These statistics offer strong evidence of the need for improved early intervention for children and their families, especially those with risk factors for academic success.

However, it is not enough to institute policy changes to implement early intervention programs. Any effort to enhance our current services for young children and their families must be undertaken with care, attending to the factors that have caused previous efforts to falter. Here is a description of central points that should be kept in mind, as we move forward.

Dosage should be titrated to meet the conditions. While poverty and special needs—such as sensory deficits, language problems, or emotional/mental health issues—present independent risks to development for children, these conditions are, unfortunately, often comorbid. For example, otitis media, or ear infections, are one of the most common reasons parents take their children to the pediatrician. In its acute form, it causes pain. With antibiotic treatment, acute otitis media is usually resolved quickly. But if left untreated it can become chronic and suppurative. This form of the condition imposes hearing loss that can be temporary, diminishing when the suppurative matter in the middle ear

34. Bernadette Rabuy & Daniel Kopf, *Prisons of Poverty: Uncovering the Pre-Incarceration Incomes of the Imprisoned*, PRISON POLICY INITIATIVE (July 9, 2015), https://prisonpolicy.org/reports/income.html [https://perma.cc/P3EZ-B2JB].

35. *Id.*

36. Candace Cortiella & Sheldon H. Horowitz, *The State of Learning Disabilities: Facts, Trends, and Emerging Issues* 1, 25 (Nat'l Ctr. for Learning Disabilties 2014).

37. *Id.* at 32.

dissipates, or permanent, caused either by damage to middle-ear structures or by transmission of the infection from middle to inner ear. Prevalence estimates have historically shown that the incidence of the disease are greater for children from low-SES environments, likely due to more risk factors, including second-hand cigarette smoke, and lack of preventative factors, such as pneumococcal and influenza vaccines.[38] Thus, poverty places a child at risk for medical problems. From the opposite perspective, parents dealing with a child with a disability often face financial challenges that other parents do not face, arising from increased medical costs and difficulty finding appropriate support services. This situation forces parents to either self-pay or go without these services. But this inter-relationship of poverty and medical risk does not need to exist. A recent study involving children of United States service members demonstrated how adequate medical care can ameliorate the effects of SES on the incidence and treatment, specifically of otitis media.[39] Families of service members all participate in the same healthcare system, regardless of rank. When data from children of these service members were evaluated, it was found that the incidence of otitis media was no greater for children whose parents were from lower SES backgrounds than for children whose parents were from higher SES backgrounds.[40]

Even when behavioral interventions are provided to children experiencing a condition that puts them at risk of developmental delay, it must be considered that these interventions have disparate impacts on the development for children as a function of SES and special-needs status. A large, prospective study involving children in the Boston Public Schools sought to examine the effects of one year of preschool education on early math and language skills, as well as on executive functioning.[41] Children were categorized as low-SES if they qualified for free or reduced lunch.[42] Outcomes showed that with just one year of early schooling, the children receiving free or reduced lunches benefitted significantly more than children not receiving free or reduced lunch on both the math assessment and the measures of executive functioning.[43]

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38. Brooke M. Su & Dylan K. Chan, *Prevalence of Hearing Loss in US Children and Adolescents: Findings From NHANES 1988–2010*, 143 JAMA OTOLARYNGOLOGY–HEAD & NECK SURGERY 920 (2017).

39. Art Ambrosio & Matthew T. Brigger, *Surgery for Otitis Media in a Universal Health Care Model: Socioeconomic Status and Race/Ethnicity Effects*, 151 OTOLARYNGOLOGY–HEAD & NECK SURGERY 137 (2014).

40. *Id.*

41. Christina Weiland & Hirokazu Yoshikawa, *Impacts of a Prekindergarten Program on Children's Mathematics, Language, Literacy, Executive Function, and Emotional Skills*, 84 CHILD DEV. 2112 (2013).

42. *Id.* at 2119.

43. *Id.* at 2123.

For example, on two measures of executive functioning—inhibitory control and cognitive flexibility—effect sizes were greater than .3 when scores for children receiving free or reduced lunches who were in the program were compared to scores for children similarly receiving free or reduced lunches, but not in the preschool program. There were no differences in performance for the children who were not receiving free or reduced lunches based on whether they were in the preschool program or not. There were no effects on language skills of early intervention, but that may be because language support and intervention in early intervention programs are often overlooked, or not presented at dosage levels sufficient to have effects.

Work in my laboratory has examined the effects of parental interaction styles on language performance of children with hearing loss, at 4 years of age. We compared these effects to those for children with normal hearing, matched on SES and age. We used the Tinkertoy task, and counted the number of parental inquiries and responses (recasts or extensions) that occurred in a 10-minute interaction. In a separate task, we measured vocabulary and MLU for language samples collected from the children. Results showed correlation coefficients greater than 0.4, which is statistically significant, between both the number of inquiries and responses in the language of the parents and both children's vocabulary skills and MLU—for the children with hearing loss. These correlation coefficients were smaller and not significantly significant for scores from the children with normal hearing. Based on these and similar findings, we may conclude that the effects of providing appropriate early education and intervention, at appropriate dosage levels, are greater for children and families presenting risk factors. In brief, these children need these services more, and need more of these services to overcome the lottery tickets they drew.

Appropriate services and adequate dosage are needed. Even when intentions are good, outcomes of early intervention suffer if services are not of an appropriate nature or provided in adequate dosage. At present, we—as a society—seem to be missing the mark. Using standardized measures of treatment effectiveness, the quality of instruction provided in early education programs has consistently been found to be of low quality and insufficient quantity, with especially poor attention paid to language and literacy.[44] Presently, there is little difference in the effectiveness of various curricula used in early intervention programs,[45]

44. Charles R. Greenwood et al., *Is a Response to Intervention (RTI) Approach to Preschool Language and Early Literacy Instruction Needed?*, 33 TOPICS IN EARLY CHILDHOOD SPECIAL EDUC. 48 (2013).

45. Preschool Curriculum Evaluation Research Consortium, *Effects of Preschool Curriculum Programs on School Readiness: Report from the Preschool Curriculum Evaluation*

and logistical changes such as lengthening the instructional day or decreasing the teacher-student ratio appear to provide little in the way of improvements.[46] On the other hand, providing professional development to practicing teachers has been shown to have positive and significant effects on outcomes.[47] Overall, specific qualities of instructional practices—especially teachers' sensitivity to the learning of individual children—seem most important to educational outcomes. Effectiveness depends strongly on the skills and sensitivities of those professionals providing the intervention.[48]

At a slightly higher level of organization, it is apparent that early intervention programs that strive to meet the needs of all students with a single approach fail to meet the needs of any student. In other words, "one-size-fits-all" approaches fit no one. In my own work, we observed this finding in a study focused on outcomes of children with hearing loss.[49] At the outset of this study, our goal was not to assess the effectiveness of the interventions provided to these students. Instead, we sought to measure the language abilities of school-age children with hearing loss in mainstream classrooms compared to their peers with normal hearing, with an emphasis on the phonological level of linguistic structure: Are children with hearing loss able to recognize individual phonemic segments in the acoustic speech signal as well as their peers with normal hearing, and how does any discrepancy in those abilities affect other language and literacy skills? All children were between 8 and 10 years of age at the time of testing, and children in the hearing loss and normal hearing groups were matched on SES.[50] Outcomes for the children with hearing loss were observed to follow a distinct bimodal distribution, with roughly half of the children performing similarly to children with normal hearing, and half falling below by a significant amount. Because children with scores in both regions of the distribution were similar in terms of SES and school placements at the time of testing, we undertook an exploration of possible sources of this difference in outcomes across groups. One clear difference between the two groups of children with hearing loss was found: those children who were performing similarly to the children with normal hearing had all attended

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Research Initiative, INST. OF EDUC. SCI. xlvi (2008), http://ies.ed.gov/pubsearch/pubsinfo.asp?pubid=NCER20082009rev.

46. Robert Pianta et al., *Features of Pre-Kindergarten Programs, Classrooms, and Teachers: Do They Predict Observed Classroom Quality and Child-Teacher Interactions?*, 9 APPLIED DEV. SCI. 144–59 (2005).

47. *Id.*

48. *Id.*

49. Susan Nittrouer & Lisa T. Burton, *The Role of Early Language Experience in the Development of Speech Perception and Language Processing Abilities in Children with Hearing Loss*, 103(1) VOLTA REV. 5 (2002).

50. *Id.* at 10.

a private early intervention (including preschool) program specifically designed to serve children with hearing loss; all those children performing more poorly had all been served by the public school system in the community.[51] To be sure, the public school program was designed for children with special needs, but it was not tailored to any specific special need. Although we did not have opportunity to evaluate outcomes of children with special needs other than hearing loss who had been served by the public school program, we may surmise that effectiveness was equally poor for those children, because disability-specific methods of intervention were not applied. In particular, methods for facilitating language and literacy acquisition are often found to be lacking in early intervention programs, as noted by Greenwood et al.[52] This factor supports the suggestion that weakness in intensity of language and literacy interventions might also account for the fact that the one kind of skill not showing improvements with early intervention in the Boston Public Schools study involved language and literacy. There are exacting methods required for supporting language acquisition in children at risk for language delays. In my own visits to early intervention and preschool programs, I find it rare that these methods are applied unless the teaching staff had explicit training in language intervention for young children.

Timing of interventions is critical. Although the focus of this review is on early intervention and education, it is important to remind ourselves that while necessary, early education is not sufficient. Evidence for this conclusion comes from evaluations of Head Start programs. Previous studies of Head Start effectiveness have typically demonstrated positive outcomes for children entering kindergarten, although the gains shown are usually not as strong as the effects of other, more intensive early intervention programs.[53] This finding emphasizes the need for adequate dosage of intervention, at the time of that intervention. Moreover, those gains appear to fade over the first few years of elementary school. While it may be tempting to attribute that outcome solely to the continued deficits found at the start of kindergarten, other evidence contradicts that conclusion. Even studies of children with hearing loss who receive appropriate and intensive intervention before the start of school have shown that these children typically continue to exhibit deficits and delays three to five years into their elementary-school experiences.[54] Much of

51. *Id.* at 32.

52. Charles R. Greenwood et al., *Is a Response to Intervention (RTI) Approach to Preschool Language and Early Literacy Instruction Needed?*, 33 TOPICS EARLY CHILDHOOD SPECIAL EDUC. 48 (2013).

53. Cheri A. Vogel et al., *Early Head Start Children in Grade 5: Long-Term Follow-Up of the Early Head Start Research and Evaluation Study Sample*, OPRE REPORT 2011-8, 23 (2010).

54. Ann E. Geers et al., *Persistent Language Delay Versus Late Language Emergence in Children With Early Cochlear Implantation*, 59 J. SPEECH, LANGUAGE, & HEARING RES. 155,

the reason for these outcomes is surely that there is a great deal of development that occurs after the start of kindergarten, and these children need just as much support to ensure smooth sailing through those changes as they needed for their preschool learning. For example, language acquisition continues up until the age of puberty, with much of that acquisition occurring between the ages of 5 and 10 years. Children need appropriate experiences with language to facilitate these developmental changes.

Experience or professionals matters. With the best of intentions, many social programs have been initiated to serve young children at risk of developmental delays. One example of a recent program is Teach for America. In this program, young adults who have recently graduated from college are given some training and sent to teach in a low-performing school. These young adults all have chosen this path in order to improve long-term opportunities for the children whom they teach. However, this endeavor is hard—and tricky. These positions would be better filled by experienced teachers, who can adapt their methods to the needs of individual children.

Community support matters. No early intervention or education program can be successful without buy-in from the individuals whom it serves. We cannot simply provide services to families and children and expect optimal changes. Instead, we must work in collaboration with community leaders, to build trust and understanding of the methods that should be implemented in order to allow all children to develop optimally, with appropriate supports provided when they are needed, and toxic elements avoided, especially at developmental epochs when they can take their greatest tolls.

III. SUMMARY

Children arrive in the world with different opportunities, facing different challenges. This variability has led to inequities in the very lives that individuals lead. But as Ebenezer Scrooge asked of the Ghost of Christmas Yet-to-Come, is this the way it might be or the way it must be? If we change our ways, can we change the circumstances responsible for these inequities?

Some of the factors affecting developmental outcomes are out of our control to influence, but others are not. We need to make policy decisions that have real effects. We need to provide optimum services to children and their families, providing the types of support that are needed at each stage of development, starting prenatally and continuing through the teen-

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157 (2016); Susan Nittrouer et al., *Development of Phonological, Lexical, and Syntactic Abilities in Children with Cochlear Implants Across the Elementary Grades*, J. SPEECH, LANGUAGE, & HEARING RES. 1, 5 (2018).

age years. We need to ensure that these services are appropriate in kind, delivered in sufficient dosage, and at the optimal developmental times to have maximum effects. We need to eliminate as many toxic influences as we can and provide interventions that ameliorate the negative consequences of those we cannot eliminate. We need to titrate the amount of service delivered to each child and family according to the risks they face and ensure that those services are specific to the nature of that risk. We need to find ways to attract, train, and retain highly skilled providers. In particular, we should strive to recruit individuals with extensive experience, rather than more junior individuals, to work with our must vulnerable children.

In order to meet these goals, there is much to consider. Our training programs for service providers need to be sufficiently flexible to permit the kinds of training that lead to optimal results. Challenges can be encountered by university administrators seeking to establish such programs, because of both local and extended regulations. For example, at the local level, there may be requirements regarding general education courses that must be met that interfere with the breadth of courses that might be needed for specialized training. More broadly, there can be regulations by professional organizations that similarly constrain options. For example, we need professionals who know how to promote language development; as has been seen, this is an area that is easily overlooked, or underserved. However, in order to meet the qualifications of the national accrediting agency for speech-language pathologists, it is necessary to provide broad training, including training in areas such as adult language disorders and swallowing disabilities. While there are clear benefits to this breadth of training, it restricts the in-depth teaching that can be done regarding language development and intervention.

In summary, we must simultaneously be working to enhance policy provisions for early education and intervention while we are evaluating how we provide those services. Only in this way can we begin to even the playing field for all children and end the ovarian lottery once and for all.