

The Science of Early Brain Development

A Foundation for the Success of Our Children and the State Economy



Wisconsin Family Impact Seminars

*A project of the School of Human Ecology, the School of Social Work,
and the College of Letters and Science at UW-Madison
in collaboration with Cooperative Extension at UW-Extension*

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First Edition

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Purpose and Presenters

In 1993, Wisconsin became one of the first states to conduct Family Impact Seminars modeled after the seminar series for federal policymakers. The Wisconsin Family Impact Seminars provide objective, high-quality research on family issues to promote greater use of evidence in policy decisions and to encourage policymakers to view policies and programs through the family impact lens. Family Impact Seminars highlight the consequences that an issue, policy, or program may have for families. Because of the success of the Wisconsin Family Impact Seminars, the Family Impact Institute, established at the University of Wisconsin-Madison/Extension, is providing technical assistance to 26 sites conducting their own seminars.

The Family Impact Seminars are a series of presentations, discussion sessions, and briefing reports that provide timely, solution-oriented research on family issues for state legislators and their aides, the Governor and staff, legislative service agency analysts, and state agency officials. The seminars provide objective, nonpartisan research and do not lobby for particular policies. Seminar participants discuss policy options and identify common ground where it exists.

“The Science of Early Brain Development: A Foundation for the Success of Our Children and the State Economy” is the 32nd Wisconsin Family Impact Seminar. For information on other Wisconsin Family Impact Seminar topics or on seminars in other states, please visit our website at <http://www.familyimpactseminars.org>.

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Briefing Reports

Each Family Impact Seminar is accompanied by an in-depth briefing report that summarizes the latest research on the topic and draws family and policy implications for state policymakers. Since 1993, 32 seminars have been conducted on topics such as corrections, evidence-based budgeting, growing the state economy, jobs, long-term care, Medicaid, prisoner reentry, school funding, and workforce development. For a list of the seminar topics and dates, please visit the Wisconsin Family Impact Seminar web site at <http://www.familyimpactseminars.org> (enter a portal and click on State Seminars). Each seminar has a page on which you can view the list of speakers, download a briefing report, and listen to and/or watch the audio and/or video of the seminar presentations.

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Executive Summary

Children’s experiences during the first few years of life shape the architecture of the brain. The developing brain can be compromised by chronic exposure to trauma such as persistent neglect, repeated abuse, severe maternal depression, or parental substance abuse that occurs with or without the added burden of poverty. Children’s response to unrelenting stress can be toxic to their immature brains and can contribute to a lifetime of impairments in physical and mental health, learning, and behavior. Children’s stress levels can be buffered and brought back to baseline by relationships with caring, responsive parents and high-quality providers of early care and education. Influencing a baby’s brain early in life is easier than reviving it later, and less expensive than the subsequent costs of remedial education, clinical treatment, public assistance, incarceration, and so forth. This briefing report addresses two questions through an economic, neuroscience, public policy, and family impact lens: How can cutting-edge research on early brain development inform state policy decisions on issues ranging from child care to foster care, from education to workforce preparation? What role can public policy play in ensuring that Wisconsin’s children get off to a great start in life?

Using an economic lens, the first chapter is written by Arthur Rolnick, former Senior Vice President and Director of Research at the Federal Reserve Bank of Minneapolis. When governments invest in high-quality early childhood education, they are investing in economic development—the future workforce of their economy—with an extraordinarily high public return. Careful studies have demonstrated that for every \$1 invested in high-quality early childhood programs, there is a return of \$4 to \$16. It is primarily society that benefits from these returns through higher worker productivity, lower education costs, reduced crime, and less government assistance. Investments that reap such high returns should be a top economic development priority for state policymakers. However, it remains a challenge to scale up the types of high-quality programs that produce such large returns. To address that challenge, the Minnesota Early Learning Foundation funded and evaluated two flagship programs: a market-based, 4-star rating system to improve the quality of early childhood programs, and a parent choice scholarship program for low-income families that supports parent mentoring and tuition for children to attend highly-rated programs.

Using a neuroscience lens, the second chapter is written by Pat Levitt, Provost Professor of Neuroscience, Psychiatry, and Pharmacy at the University of Southern California. Decades of research reveal how the brain develops and the ways that children’s early experiences are built into the architecture of the brain. The challenge that policymakers face is how to capitalize on this exciting new science and its potential for building a solid foundation for economic productivity, responsible citizenship, and a prosperous society. The environments children grow up in shape how the brain develops with one powerful influence being toxic stress. Even among children as young as infants, toxic stress can damage the brain’s response to stress making it difficult to correctly interpret the world, function at a high level, and avoid problems later in life. Children’s ability to cope with stress depends, in part,

upon stable and caring relationships with parents and the adults who care for them. Healthy development is threatened, not only by bad things that happen to children, but also by the absence of good things. One prevalent threat to children's healthy development is severe neglect, a form of toxic stress more common than physical or sexual abuse. Children who have been neglected have the capacity to recover with promising interventions that target both the child and their parents/caregivers. In evaluations, programs that build supportive relationships produce biological changes in children's response to stress that can have lifelong benefits.

Using a public policy lens, the third chapter is written by Katherine Magnuson, Professor of Social Work at UW-Madison. Wisconsin can build on several initiatives to position the state as a leader in early childhood policy. To do it right, public-private partnerships that share responsibility offer greater potential than either government or private action alone. To guide their decisions, policymakers can look to evaluations of promising interventions that transform the lives of young children who have experienced trauma, along with data on the track record of Wisconsin policies. As of 2012, Wisconsin ranked 4th in the nation for access to public pre-k programs for 4-year-olds, but 21st for 3-year-olds. In 2010, Wisconsin established YoungStar, its 5-star child care quality improvement and rating system. Currently, 70% of rated programs in the state are at the 2-star level; the largest barrier for providers to move up to 3 stars is meeting educational standards for staff in a workforce with high rates of turnover. Wisconsin's two public-private programs for improving educational attainment and compensation for the early childhood workforce—T.E.A.C.H. and R.E.W.A.R.D.—both have long waiting lists. When deciding what to invest in, the key is choosing evidence-based strategies that are implemented well with funds set aside for evaluation. The up-front costs may be less important than the long-term return on investment; programs that cost less because they employ less competent staff are a waste of money if they do not have the expertise it takes to produce impacts. When deciding who to target, state and local data can identify those most vulnerable—children with special needs; families of color; those experiencing toxic stress; families facing health or financial challenges; and so forth.

Using a family impact lens, stable and caring families can help children cope with stress and contribute to healthy brain development in several ways. Parents and caregivers promote children's physical health by assuring proper nutrition, providing preventive health check-ups, protecting children from toxins and preventable injuries, and decreasing exposure to toxic stress. Parents form secure attachment relationships with their children by being reliably available and responsive. Secure attachment predicts a number of qualities that most societies value in their citizenry—competent problem solving, involvement, leadership, and self-confidence.

One key feature in many effective programs and policies for young children is how families are viewed, engaged, and empowered. Typically, the abuse or neglect of a child is viewed as a criminal justice violation rather than as a matter of child development in the context of a family in crisis. When families are in crisis, interventions that work best focus on the cause of the stress. For example, addressing family factors such as addiction to substances, parental depression,

medical challenges, and social isolation have been shown to have a positive effect on child outcomes even though they do not specifically address children. When both children and their parents are engaged in interventions, programs have been shown to turn around the lives of children, both those who continue to live with their family and those placed in foster care. In Minnesota's promising early childhood policies, parents were deliberately empowered. Low-income parents were informed about the importance of child care quality in their children's development, provided tuition support to high-quality programs, and mentored by home visitors on program selection.

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Investing in Early Childhood Development is Smart Economic Development

by Arthur Rolnick

Former Senior Vice President and Director of Research, Federal Reserve Bank of Minneapolis, and Senior Fellow and Co-Director of the Human Capital Research Collaborative, University of Minnesota

Arthur Rolnick

When governments invest in high-quality early childhood education, they are investing in economic development—the future workforce of their economy—with an extraordinarily high public return. Careful studies have demonstrated that for every \$1 invested in high-quality early childhood programs, there is a return of \$4 to \$16. It is primarily society that benefits from these returns through higher worker productivity, lower education costs, reduced crime, and less government assistance. Investments that reap such high returns should be a top economic development priority for state policymakers. However, it remains a challenge to scale up the types of high-quality programs that produce such large returns. To address that challenge, the Minnesota Early Learning Foundation funded and evaluated two flagship programs: a market-based, 4-star rating system to improve the quality of early childhood programs, and a parent choice scholarship program for low-income families that supports parent mentoring and tuition for children to attend highly-rated programs.

For well over 20 years, state and local governments have been deeply engaged in efforts to promote economic development. Unfortunately, many economic development strategies are at best a zero-sum game. For example, virtually every state in the union has tried to create jobs by luring new companies with government subsidies. These bidding wars are shortsighted because jobs are not created, they are only relocated; nationally, the public return is at most zero.¹ Any local economic gains are suspect because they might have happened without the subsidies. In other words, what often passes for economic development and sound public investment is neither.

Many economic development strategies are a zero-sum game because jobs are not created, only relocated.

The Economic Case for Investing in Early Childhood Development

If business subsidies are a flawed approach to promoting economic growth, what is an alternative? Answering this question starts with an understanding that markets generally allocate scarce resources to their most productive use. Consequently, governments should only intervene in markets in which there is a market failure. Market failures can occur for a variety of reasons, such as when goods have external effects on society or when they have public attributes. Education has long been recognized as a good that has both external effects and public attributes. Education not only benefits those who have more schooling through higher wages, but educated people benefit all of society since they are more likely to participate in civic institutions, including voting, and are less likely to commit crime. Without public support, markets produce too few educated workers.

Government has generally supported public funding for education because it breeds economic success for those being educated and also for the overall economy. For example, prior to 1983, the wages of a worker with an undergraduate degree exceeded a worker with a high school degree by roughly 40%. A decade later, that difference was close to 60%. The wage premium for an advanced degree has grown even more. Prior to 1985, the wages of a worker with a graduate degree exceeded those of a worker with a high school degree by roughly 60%. That difference has grown to over 100%. This so-called education premium is expected to grow even larger over the next 30 years.

Investments in early childhood development—society’s future workforce—yield exceptionally high public returns.

Yet knowing that we need a highly educated workforce does not tell policymakers where to invest limited public resources. The economic case for investing in K-12 and higher education has been well established. However, recent studies show that dollars invested in early childhood development—society’s future workforce—yield exceptionally high public returns.

The promise of early childhood development programs is based on fundamental facts about early human development. Children’s quality of life and their contributions to society as an adult can be traced back to their earliest experiences. The basic architecture of the brain begins forming prenatally, and undergoes tremendous growth during the first five years of life. Although the brain continues to develop into adulthood, early experiences are crucial to establishing the strong foundation necessary for future learning and healthy development. The brain is also most flexible early in life, so promoting healthy development when people are younger is more efficient and effective than waiting until they are older.²

The brain’s growth and flexibility during the first few years also means that early adverse experiences can produce profound and lasting damage to development. Research on early brain development has shown how chronic exposure to toxic stress, stemming from persistent abuse, neglect, or poverty, for example, can damage the developing brain. Exposure to toxic stress leads to the underdevelopment of neural connections that form the foundation for cognitive, social, and emotional skills that are essential on the job and in life.³

Without adequate nurturing during these early years, a child is more likely to drop out of school, depend on welfare benefits, and commit crime—thereby imposing significant costs on society. With adequate nurturing during the early years, children are more likely to succeed in school, become productive workers, and contribute to society.⁴ Research has shown that well-designed early childhood interventions can provide the types of support necessary to foster healthy brain growth and to buffer children from the effects of adverse childhood experiences.

Economic Returns of Early Childhood Programs

Early childhood programs recognize the potential of providing children with a good start in life and the risk of neglecting to do so. Early childhood programs encompass home visiting, home- and center-based child care, and preschool programs that supplement and enhance the ability of parents to provide a solid foundation for their children. Some have been initiated on a large scale, such as

federally funded Head Start; other small-scale and often more expensive model programs have been implemented locally.

Are we directing enough funding to early childhood programs? I make the case that we are not. Careful academic studies demonstrate that tax dollars spent on early childhood development provide extraordinary returns compared with other investments in the public and private sectors. Some of the benefits are private gains for the children involved, in the form of higher wages later in life. But the broader economy also benefits, because those who participate in high-quality early childhood programs develop enhanced skills and become more productive workers. Recent research shows that over three fifths of Americans will continue to live and work in the same state where they grew up. Thus, the long-term returns from early childhood investments are likely to accrue to the state or region making the investment.⁵

Cost-Benefit Analyses of Early Childhood Programs

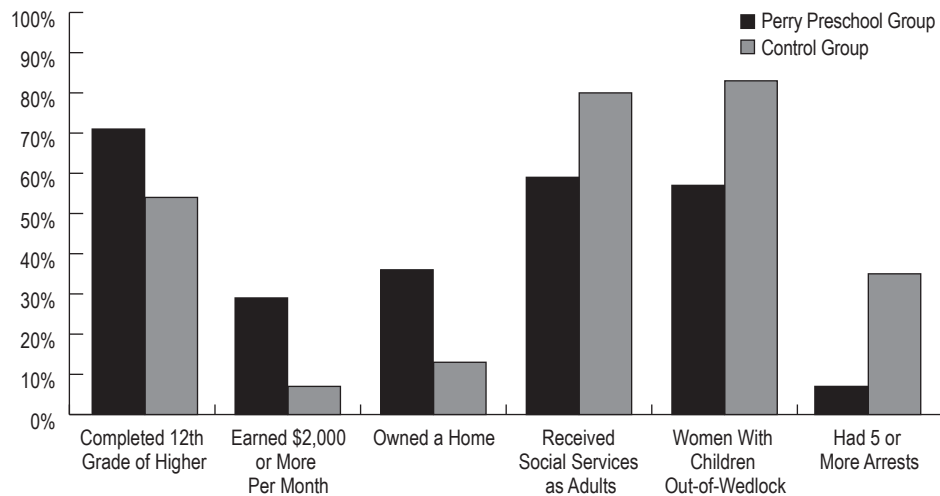
How much confidence can we have in the research on the benefits of early childhood investments? Several early childhood programs have been evaluated using the “gold standard” of research designs—where children are randomly assigned to treatment and control conditions and followed well into adulthood. The return on early childhood programs that focus on at-risk families far exceeds the return on most economic investments, both public and private. Cost-benefit analyses from rigorous studies including the Perry Preschool Program, Abecedarian Project, Chicago Child-Parent Centers, and Elmira Prenatal/Early Infancy Project, showed returns ranging from \$4 to \$16 for every dollar invested. Annual internal rates of return, adjusted for inflation, range between 7% and 18%.

One often-cited study is the High/Scope Perry Preschool project in Ypsilanti, Michigan. During the 1960s, the Perry Preschool program provided 3- and 4-year-old children with daily classroom sessions each morning, followed by family home visits in the afternoons. The program targeted low-income, African American children considered to be at high risk of school failure. Teachers were certified in elementary, early childhood, and special education with salaries comparable to school teachers. One teacher was on staff for every six children. Researchers tracked the performance of 58 children who participated in the program and compared the results to a randomly assigned control group of 65 children who did not participate.⁷

At age 27, 117 of the original 123 subjects were interviewed. Researchers found significant positive outcomes for the Perry Preschool participants in adulthood compared to the control group. After a few years, program participants lost their advantage in IQ scores over nonparticipants, which suggests that a key factor of the program’s success stems from development in executive function, including the ability for self-regulation, task persistence, and motivation. As shown in Figure 1, Perry Preschool participants were more likely to finish high school, have higher earnings, and own a home; they were also less likely to receive social services, bear a child outside marriage, or be arrested for crime. Perry Preschool participants had significantly higher achievement scores at age 14, spent half as much time in special education programs, and had half as many arrests compared to nonparticipants.⁸

The return on early childhood programs for at-risk families far exceeds the return on most economic investments, both public and private.

Figure 1. Significant Effects of the Perry Preschool Program



Source: Schweinhart, L. J. (1993).

Other studies of early childhood programs also show improvements in scholastic achievement and reductions in crime. For example, the Syracuse Preschool Program provided support for disadvantaged children from prenatal care through age five. Ten years later, problems with probation and criminal offenses were 70% less among participants compared with a control group.⁹ The Abecedarian Project in North Carolina offered low-income children a full-time, high-quality, educational program from infancy through age five. Compared to nonparticipants, the program improved participants' reading and math achievement into young adulthood, and reduced incidences of grade retention and special education placements by age 15.¹⁰

Internal Rate of Return of the Perry Preschool Program Versus Other Investments

For every \$1 invested in the Perry Preschool Program, over \$16 in benefits was returned to the program participants and society.

The High/Scope Perry Preschool study conducted a cost-benefit analysis by converting the benefits and costs found in the study into monetary values expressed in constant dollars. For every \$1 invested in the program during the early 1960s, over \$16 in benefits was returned to the program participants and society as a whole.

These are impressive returns, but how do they compare to other economic development strategies? Another measure, the internal rate of return (a measure of the annual return on investment), can be used to compare the expected profitability of different projects. My colleagues and I have estimated the real (adjusted for inflation) internal rate of return for the Perry Preschool program at 18%.

Program participants directly benefited from their increase in after-tax earnings and fringe benefits. Yet based on present value estimates, about 80% of the benefits went to the general public. Reduced costs (e.g., education and crime) yielded over a 16% internal rate of return for society. Compared with other public and even private investments, early childhood programs seem like a good buy.

As with all studies, there are caveats to the High/Scope Perry Preschool findings. On one hand, this study may overstate the results we would achieve today. Sources of toxic stress—neglect, parental drug use, neighborhood crime, fragile families—are more prevalent for many children today than they were 45 years ago. Nevertheless, even when we adjust our estimates to be more conservative, the return on investment remains large.

On the other hand, the High/Scope Perry Preschool study may understate the results we could achieve today. For example, with increased education and earnings, participants' children—the next generation—would be less likely to commit crime and more likely to achieve higher levels of education and income than nonparticipants' children. A chain of poverty may have been broken.

Bringing Early Childhood Development Programs to Scale: The Minnesota Early Learning Foundation Pilot Projects

These findings establish the promise for small-scale early childhood programs to improve child outcomes, but can their success be reproduced on a much larger scale? In 2005, the Minnesota Early Learning Foundation invested \$20 million of private funding to pilot research-based approaches for improving early childhood education in several Minnesota communities. Based on a careful review of past and current programs, pilot projects were designed to incorporate key features that would ensure effectiveness, quality, scalability, and sustainability:

- early intervention,
- parent involvement and empowerment,
- focus on the most at-risk children,
- educational support,
- quality assurance, and
- outcome orientation.

The Foundation developed and funded two flagship programs that, together, encompass these features: the Parent Aware quality rating and improvement system for early childhood program providers, and the Saint Paul Early Childhood Scholarship Program for low-income families.^{11,12} The design of the system was two-pronged: families were empowered to make informed choices about early childhood care, and programs were encouraged to enhance quality through evaluation and competition within the provider market.

Parent Aware is a 4-star rating system for evaluating the quality of early childhood programs. Unique from quality rating systems in other states, it emphasizes using market forces to drive up the quality of early childhood programs. During implementation, high priority was placed on informing parents about the importance of program quality and making the rating system highly visible and easily accessible to parents. Program providers were incentivized to participate in the voluntary rating system through quality improvement coaches and grants to help them implement best practices. Also, aggressive marketing efforts made families aware of the system and how to use it.

Parent involvement and empowerment is one key to the effectiveness, quality, scalability, and sustainability of early childhood programs.

Minnesota's approach was two-pronged: improving child care quality and providing low-income families with tuition support to high-quality programs.

The Saint Paul Early Childhood Scholarship Program provided parents access to tuition support for early childhood programs, and to home visiting mentors to help parents determine for themselves what would be best for their child's development. Families were eligible if their incomes were below 185% of the federal poverty level and if they lived in one of the targeted Saint Paul neighborhoods. Given the importance of early intervention, mentoring began prenatally or during infancy. Scholarships were offered when children were 3 and 4 years old. Parents could select from a mix of public and private providers including preschool, center-based, and home-based programs. To ensure quality, scholarships could only be used toward programs rated as high quality by Parent Aware. Paperwork was minimized for the family and provider.

Evaluation Results from the Parent Aware and Scholarship Programs

As part of their initiative, the Minnesota Early Learning Foundation invested a significant amount of funding into program evaluation to determine what worked and what could be improved.^{13,14}

- The programs increased access for low-income children to attend high-quality early childhood programs. Prior to the program, 57% of program children were in unlicensed care; with the scholarship, 100% of these children were in highly-rated early childhood programs.
- Parent Aware ratings effectively encouraged providers to improve quality. Over two years, the supply of highly-rated early childhood programs increased by over 55% in the targeted areas. There was a steady increase each year in the number of participating providers and those receiving the top rating. Improvements were seen across a range of program types.
- Program providers made the most progress in the category of fostering family partnerships; they had the most work to do to improve the use of research-based teaching materials and effective adult-child interaction techniques.
- Children attending programs with high Parent Aware ratings showed significant gains on measures of language, early literacy, and social competence by kindergarten. Gains were especially high for low-income children, many of whom went from very low performance before the program to age-level performance at kindergarten entry. Such gains have been shown to predict later school achievement and success.
- Implementation data indicated that the scholarship program could be successfully scaled up and replicated in other communities. Program participants, including families, funders, administrators, program providers, and parent mentors reported positive experiences and outcomes with the program. The system was well streamlined and easy to use.¹⁵
- Advertising campaigns were essential for raising awareness of the Parent Aware system and prompting families to visit the website. Results suggested the importance of ongoing, multi-year marketing efforts to fully tap into the power of market forces.

Conclusion

Strong and growing evidence has confirmed that investments in high-quality early childhood programs provide exceptionally high returns to society. These returns are on the order of \$4 to \$16 for every dollar invested. The public return on investment from early childhood programs for low-income families is extraordinary—resulting in better working public schools, a more educated workforce, and less crime, all which contribute to a stronger economy.

Why have we missed this connection between early education and the social and economic well-being of society? Perhaps because the research on the economic benefits to society is recent. Also, we tend to create policy in silos—education under one roof, corrections in another, and health care in yet another. In reality, however, they are closely connected.

The Minnesota Early Learning Foundation created a successful model for investing in early childhood development that is relatively easy to scale up, that emphasizes program quality, that empowers families, and that improves children’s learning. Indeed, early childhood development is like a low-risk, blue chip stock that pays extraordinary dividends that are long-lasting.

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Endnotes

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Toxic Stress and its Impact on Early Learning and Health: Building a Formula for Human Capital Development

by Pat Levitt

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Decades of research reveal how the brain develops and the ways that children's early experiences are built into the architecture of the brain. The challenge that policymakers face is how to capitalize on this exciting new science and its potential to build a solid foundation for economic productivity, responsible citizenship, and a prosperous society. The environments children grow up in shape how the brain develops with one powerful influence being toxic stress. Even among children as young as infants, toxic stress can damage the brain's response to stress making it difficult to correctly interpret the world, function at a high level, and avoid problems later in life. Children's ability to cope with stress depends in part, upon stable and caring relationships with parents and the adults who care for them. Healthy development is threatened, not only by bad things that happen to children, but also by the absence of good things. One prevalent threat to children's healthy development is severe neglect, a form of toxic stress more common than physical or sexual abuse. Children who have been neglected have the capacity to recover with promising interventions that target both the child and their parents/caregivers. In evaluations, programs that build supportive relationships produce biological changes in children's response to stress that can have lifetime benefits.

The path to a sound economy and the state's future prosperity depend on the well-being of our children.¹ One of the state's most important responsibilities is building a formula for developing human capital. Burgeoning research in the fields of neuroscience, molecular biology, genomics, and epigenetics reveals why early child development—particularly from birth to five years—is the foundation for a prosperous society. Decades of research reveal how the brain develops and the ways that children's early experiences are built into the architecture of the brain.

The challenge policymakers face is how to capitalize on this exciting new science. Policies that build a strong foundation for children's early learning and behavior can improve school success, economic productivity, and responsible citizenship.² This chapter reviews the science of how the architecture of the brain develops, the ways that stress differs in its nature and severity, how toxic stress disrupts the architecture of the brain, what role children's relationships and experiences play in buffering toxic stress, how neglect contributes to toxic stress, and what policies and programs can improve children's response to stress. Implications will be given for public policy decisions that can ensure children get a great start in life.

Policies that build a strong foundation for children's early learning and behavior can improve school success, economic productivity, and responsible citizenship.

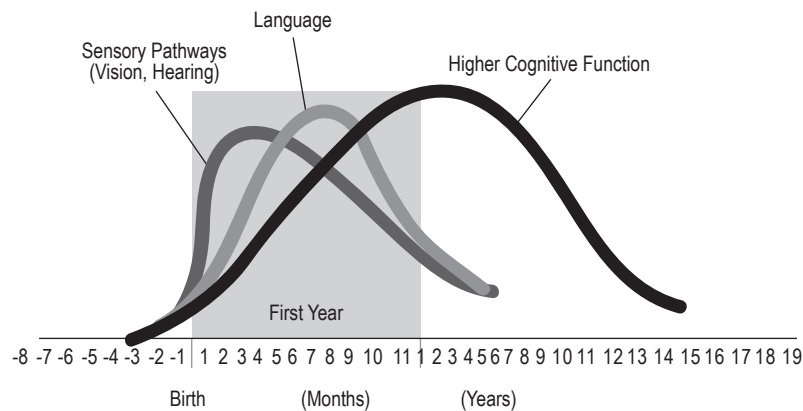
Pat Levitt

The Science of Early Brain Development

***Just like a home,
the brain is built
sequentially by
laying the foundation,
framing the rooms,
and wiring the
electrical system.***

Decades of research reveal many ways that the brain develops, four that are mentioned here: (1) the biology of how the brain develops, (2) what factors influence it, (3) when it is most malleable, and (4) the ways in which the brain operates. First, research tells us that “brains are built over time from the bottom up (p. 1).”³ Simple circuits and skills are formed first providing the foundation for more advanced circuits and skills to emerge later in life. When the brain is built on a strong foundation, it increases the odds of healthy development; when the foundation is weak, it increases the chances of later difficulties. Just like constructing a home, the brain is built following a predictable sequence—laying the foundation, framing the rooms, and wiring the electrical system.⁴ The “wiring” of the brain cells occurs rapidly in the first few years of life; an amazing 700 new neural connections (synapses among brain cells) are formed every second.⁵ As illustrated in Figure 1, the neural connections that develop first are the pathways for basic sensory functions like vision and hearing. This provides a critical foundation for the infant to begin to interact with the environment. Next, the pathways for early language develop followed by those for higher cognitive functions that form over the years.

Figure 1. Human Brain Development: Neural Connections for Different Functions Develop Sequentially



Note: In the proliferation and pruning process, simpler neural connections form first, followed by more complex circuits. The timing is genetic, but early experiences determine whether the circuits are strong or weak. Graphic courtesy of the Center on the Developing Child at Harvard University. Data source: C. A. Nelson (2000). <http://developingchild.harvard.edu>

Second, the developing brain is shaped by both genes and experience. Genes provide the blueprint, but early experiences determine how strong or weak the neural circuits will be. In part, this occurs through a process termed “epigenetics,” in which experiences promote chemical signatures on a child’s DNA that finely control when and how genes will be used during development. These changes to the genes that we inherit may be permanent.⁶ Brain architecture is fueled by baby’s inborn drive to use their senses to master their world. Babies babble, coo, and reach out to people, who respond with their own words and gestures, much like the “serve and return” in a game of tennis. The developing brain is also shaped

by children's relationships, first with members of their family but also their peers, primary caregivers, and other adults who play important roles in their lives. Thus, children grow up in an environment of relationships, and if these relationships are not reliable and responsive, the developing architecture of the brain may be disrupted in ways that impair future learning, behavior, and development.⁷

Third, the brain is most plastic early in life. This allows babies to adapt to a wide range of environments and relationships. As the brain becomes more specialized, it is less able to adapt to new or unexpected challenges. For example, as early as the first year of life, the baby's brain is becoming specialized to the sounds that it hears and is already losing its ability to respond to sounds in other languages.⁸ When neural circuits are not formed properly from the beginning, it takes more physiological energy to compensate later. This means that influencing a baby's brain early in life is easier than rewiring it later, and less expensive than the subsequent costs of remedial education, clinical treatment, public assistance, incarceration, and so forth.⁹

Fourth, the brain operates in a highly interconnected fashion, not in silos. Children's emotional, social, and cognitive competence do not operate in isolation, but depend upon each other for proper functioning. Together they form the "bricks and mortar" that are the foundation for human development.¹⁰

If relationships with family and caregivers are not responsive, the architecture of children's brains may be disrupted in ways that impair future development.

Pat Levitt

Stress Differs in its Nature and Severity

The environment has a powerful impact on brain architecture and child development. One particular type of experience that has received a lot of attention is stress. There are different kinds of stress; it can be harmful (what we call "toxic"), tolerable, or beneficial (positive) depending on the severity of the stress, a child's ability to cope, and how long the stress response lasts. Most adults have had the experience of facing a threat, being gripped by fear and anxiety, and having trouble thinking. Most of us have learned how to adapt to stress through early experiences that tune our circuits to be resilient to challenges. But when children live in highly threatening, chaotic, or severely neglectful environments, these continuous experiences impact negatively on the circuits that control how well they will adapt to stress later in life. These types of toxic stress cause significant difficulties for young children to perform well cognitively, even when they are in a safe place like school.¹¹ Understanding the differences between stress that is harmful, tolerable, or even beneficial can help policymakers determine what prevention strategies are appropriate and when interventions are needed.¹²

Toxic stress refers to events that produce strong, frequent, or prolonged activation of the body's stress management system. Stress can physically damage brain architecture when it is chronic, uncontrollable, or experienced without a caring adult. In extreme circumstances, certain parts of the brain that are necessary for emotional control, memory and learning, and problem-solving may actually be smaller. In less extreme circumstances, the stress system may change, reacting to events that might not be stressful to others.¹³ Over time, the "wear and tear" of this excessive stress response and the chemicals it releases can lead to academic problems, difficulties in social adjustment, mental illness (e.g., depression, anxiety disorders, alcoholism, drug abuse), and chronic physical disease (e.g., heart problems, diabetes, stroke).¹⁴

Tolerable stress could affect brain architecture, but generally it occurs for briefer periods that allow the brain to recover and reverse any potentially harmful effects. For example, when supportive adults are available, children can recover from major adverse experiences such as a natural disaster, death or serious illness of a loved one, parental divorce, or a serious accident.¹⁵

Positive stress is what many of us experience as children—a moderate, short-lived stress that is a normal part of child development. For example, meeting new people, starting a new child care arrangement, speaking in front of a class, or getting an immunization can be positive stressors if the child has the support to deal with them.¹⁶

How Toxic Stress Disrupts the Architecture of the Brain

Even among children as young as infants, toxic stress can damage the architecture of the developing brain.

Even among children as young as infants, their response to toxic stress in their family and caregiving environments can damage the architecture of their developing brains. A child’s ability to deal with stress depends upon highly interrelated brain circuits and hormone systems. When a child is threatened, stress hormones are produced that send chemical signals to the brain and throughout the body. The neural circuits for dealing with stress are particularly malleable during the fetal and early childhood periods. Toxic stress during this early period can lead to stress response systems that turn on too quickly or shut down too slowly. A poor response to stress can be damaging to a child’s health and well-being if it is turned on too often or for too long.¹⁷ Toxic stress can actually tune a child’s sensory and cognitive systems in ways that make it challenging to correctly interpret the world around them. This can make it difficult to function at a high level and to avoid problems later in life.

When the body responds to stress, a variety of hormone and neurochemical systems are activated. For example, acute stress produces adrenalin that mobilizes energy stores and alters blood flow. Cortisol is also produced because it helps the body cope with many forms of stress; when acutely released, cortisol mobilizes energy stores and suppresses the body’s immune system.¹⁸

Frequent or sustained activation of the hormone system can have serious developmental consequences that can persist long past the time of stress exposure. For example, when cortisol levels are elevated intermittently for a long time, it can change the architecture of the regions of the brain that are essential to learning and memory. Sustained activation also results in novel “epigenetic” modifications that can result in permanent disturbances in a child’s physiology.¹⁹ Thus, even how a child responds to stress during the important years of schooling and later in adult life can be changed. In animal studies, the offspring of pregnant females who experience exceptionally high levels of stress are more fearful and more reactive to stress themselves. They experience impaired memory and learning abilities along with more aging-related cognitive deficits in adulthood.²⁰

The Role of Children’s Relationships and Experiences in Buffering Toxic Stress

The impact of toxic stress on the developing brain is determined by the child’s response to it. Stable and caring relationships with adults can help children cope

with stress and will contribute to healthy brain development in a number of ways. Parents and caregivers promote children’s physical health by assuring proper nutrition, providing preventive health check-ups, and protecting children from toxins and preventable injuries. Sound adult relationships with children also can increase the predictability of daily routines and decrease exposure to toxic stress.²¹

The quality of the caregiving—its sensitivity and responsiveness—can serve as a powerful buffer against stress, even among children who may be highly vulnerable to its effects. It is a surprise to many that the absence of “serve and return” interactions is the most common form of toxic stress. For example, a mother’s clinical depression during her child’s early years interferes with her responsiveness, which can increase the child’s cortisol reaction to adverse family conditions later in childhood. From the earliest times after birth, therefore, parents’ availability and responsiveness literally shape the architecture of the emerging brain by building the neural circuits that are the foundation for the child’s emerging capabilities and the roots of their physical and mental health. Stable and high-quality child care environments also contribute powerfully to building healthy brain architecture. The absence of these responsive relationships activates the body’s stress response system in ways that can have lifelong mental and physical health consequences.²²

Primary caregivers who provide inadequate care may experience a number of predisposing factors such as economic hardship, social isolation, and/or chronic disease. Adults who provide inadequate care may have a number of mental health impairments including depression, anxiety, post-traumatic stress disorder, serious personality disorders, or substance abuse involving the use of alcohol or illicit drugs. Those caregivers at highest risk often experience several of these problems simultaneously. Research finds that inadequate or neglectful caregiving occurs in every culture, at all income levels, and in all racial, ethnic, and religious groups.²³

The quality of early care and education programs can also influence whether and the extent to which young brains are exposed to elevated stress hormones early in life. For example, compared to their peers in higher quality child care, young children in poorer quality care show disrupted daily cortisol levels.²⁴

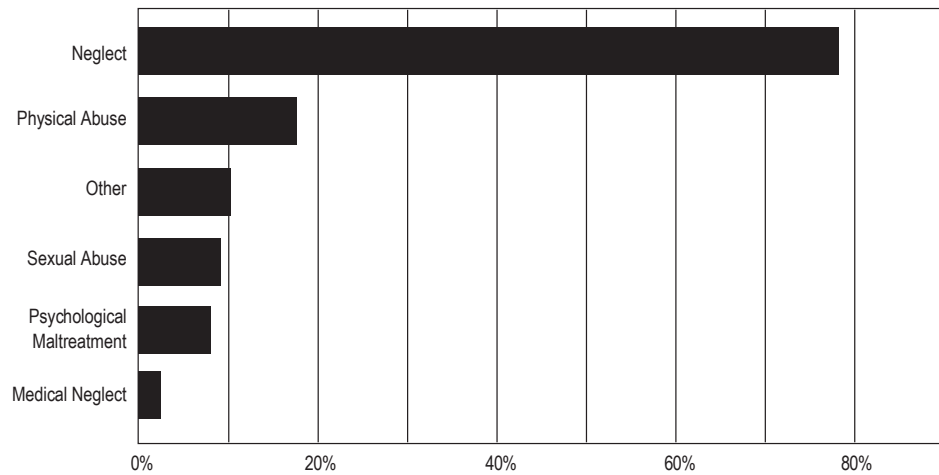
Compared to their peers in higher quality child care, young children in poorer quality care show disrupted daily cortisol levels.

How Neglect Contributes to Toxic Stress

Extensive research over the last 30 years has shown that healthy development can be threatened, not only by bad things that happen to children (e.g., physical abuse, sexual exploitation), but also by the absence of good things (e.g., responsive caregiving, positive experiences). In fact, deprivation or neglect can damage a young child’s development more than physical abuse. To researchers, neglect refers to the “absence of sufficient attention, responsiveness, and protection that are appropriate to the age and needs of a child” (p. 2).²⁵ The earliest studies of neglect were of children who experienced extreme deprivation in state-run institutions in Romania, China, and other places outside North America.

Neglect is by far the most prevalent form of child maltreatment in the United States, yet it receives far less public attention than physical or sexual abuse. In 2010, neglect comprised 78% of all reported cases of maltreatment nationwide.²⁶

Figure 2. Neglect is the Most Prevalent Form of Child Maltreatment



Note: Each state defines the types of child abuse and neglect in its own statute and policy, guided by federal standards, and establishes the level of evidence needed to substantiate a report of maltreatment. The data above, from the National Child Abuse and Neglect Data System (NCANDS), reflects the total number of victims (defined as a child for whom the state determined at least one report of maltreatment was found to be substantiated or indicated) as reported by all 50 states, the District of Columbia, and Puerto Rico, between Oct. 1, 2009, and Sept. 30, 2010. "Other" includes abandonment, threats of harm, and drug addiction. Graphic courtesy of the Center on the Developing Child at Harvard University. Data source: U.S. Department of Health and Human Services. <http://developingchild.harvard.edu>

State welfare systems typically define neglect in the categories of:²⁷

- 1) physical or supervisory oversight (failure to provide adequate food, shelter, hygiene, and/or appropriate monitoring)
- 2) psychological neglect (failure to attend to a child's emotional and/or social needs)
- 3) medical neglect (failure to secure adequate medical treatment)
- 4) educational neglect (failure to provide for a child's formal learning needs)

Young children who are neglected may not have suffered physical harm, but may still have disruptions in their brain circuitry.

These long-standing standards are valid, but they do not help judge the severity of neglect or when to intervene. The federal Child Abuse Prevention and Treatment Act (CAPTA), which was amended by the Keeping Children and Families Safe Act, includes in its definition failure to prevent imminent risk of serious harm. This definition fails to sufficiently acknowledge the less immediately visible but still highly threatening, long-term consequences of excessive deprivation that can have severe lifelong consequences. Indeed, science tells us that young children who meet the criteria for neglect may not have suffered physical harm, but may still have experienced disruptions in their brain circuitry. Here is where science can help by identifying four types of responsive care that provide a useful framework for knowing when and how to protect vulnerable children.²⁸

Occasional inattention. Loving and responsive parents who do not always respond in a timely fashion to the needs of young children are not a need for concern. Indeed, sometimes it can be beneficial when parents occasionally do not respond immediately because it helps build a child's independence and capacity for self care and problem solving.

Chronic under-stimulation. When caregivers fail to provide attention to children on an ongoing basis, this can be harmful to children. Examples include caregivers who do not engage children in active conversation and who leave children in front of a television for hours at a time. Understanding the reasons for caregiver unresponsiveness (e.g., depression, illness, poverty, discrimination, social or geographic isolation) can help identify what responses are most appropriate. Parent education and high-quality care and education programs can produce strong returns on relatively simple, voluntary interventions.

Severe neglect in a family context. When a child’s basic needs for nutrition, medical attention, and education are unmet and when young children are left alone or ignored for hours, a child’s very survival is threatened. This can lead to lifelong problems in learning, behavior, and health. Immediate attention is crucial.

Severe neglect in an institutional setting. Institutions that “warehouse” large numbers of infants and young children are examples of extreme deprivation. Even though a child’s basic needs for food, shelter, and medical care are met, there are often no reliable and responsive relationships with adults. Staff typically have little or no training, youngsters are ignored for most of their waking hours, and infants are cared for by many different people, making it difficult to develop meaningful relationships with any single caregiver. Most of the research on neglect in institutional settings comes from locations outside the United States such as Eastern Europe, but there is growing evidence that some residential care facilities in the United States are harmful to infants and toddlers, and are not a good substitute for adoption or high-quality foster care.

Science can help policymakers determine when it is best to intervene. Table 1 describes the features of four types of unresponsive care and indicates which types warrant policymakers’ attention and which do not.

Table 1. Science Helps to Differentiate Four Types of Unresponsive Care

	Occasional Inattention	Chronic Under-Stimulation	Severe Neglect in a Family Context	Severe Neglect in an Institutional Setting
Features	Intermittent, diminished attention in an otherwise responsive environment	Ongoing, diminished level of child-focused responsiveness and developmental enrichment	Significant, ongoing absence of serve and return interaction, often associated with failure to provide for basic needs	“Warehouse-like” conditions with many children, few caregivers, and no individualized adult-child relationships that are reliably responsive
Effects	Can be growth-promoting under caring conditions	Often leads to developmental delays and may be caused by a variety of factors	Wide range of adverse impacts, from significant developmental impairments to immediate threat to health or survival	Basic survival needs may be met, but lack of individualized adult responsiveness can lead to severe impairments in cognitive, physical, and psychosocial development
Action	No intervention needed	Interventions that address the needs of caregivers combined with access to high-quality early care and education for children can be effective	Intervention to assure caregiver responsiveness and address the developmental needs of the child required as soon as possible	Intervention and removal to a stable, caring, and socially responsive environment required as soon as possible

Note: Graphic courtesy of the Center on the Developing Child at Harvard University. <http://developingchild.harvard.edu>

The clearest findings on the effect of deprivation on the developing brain come from children who experienced severe neglect while being raised in institutions, and also from studies of how their lives have been turned around by foster care placements or permanent adoption. Based on extensive research, severe neglect in institutional settings is associated with physical, social, and behavioral disadvantages. Physically, when children are severely neglected, abnormalities occur in the developing brain. For example, severe neglect is associated with delayed growth in head circumference, which directly reflects brain growth. Children who experience profound deprivation have more infections and are at greater risk of premature death. This may occur because disrupting the stress response long-term causes the immune system to malfunction when challenged, which then increases the risk of stress-related disease throughout life.²⁹

Children who experience deprivation and extreme social neglect show diminished electrical activity in the brain, decreased brain metabolism, and poorer connections for integrating complex information. Severely neglected children also struggle when looking at human faces to correctly identify different emotions. Significant neglect also affects the development of a variety of brain regions such as the prefrontal cortex that supports a wide range of executive functions such as planning, controlling impulses, solving problems, and staying focused. Also, serious deprivation is associated with abnormal activity in areas of the brain involved in emotion and stress regulation (i.e., the amygdala and hippocampus) and also attention and self-control (e.g., the anterior cingulate cortex).³⁰

Secure attachment predict qualities societies value in their citizenry—competent problem solving, involvement, leadership, and self-confidence.

Whether neglect occurs in a family, day care, school, or institutional setting, children experience difficulties in relationships with family members, caregivers, and friends. Children who have experienced neglect have higher rates of insecure attachment with their primary caregivers.³¹ Secure attachment, basically the relationships that form when caregivers are reliably available and responsive, predicts a number of qualities that most societies value in their citizenry—competent problem solving, involvement, leadership, and self-confidence. In addition, secure attachment and the quality of care early in life reduce the risk of kids dropping out of school later in life.³² Compared to their non-neglected peers, preschoolers who experience serious neglect also are more likely to become overly dependent on their teachers for support and nurturance. Furthermore, youngsters who experience serious neglect in their families engage in fewer social interactions with peers during preschool, a pattern that continues into adolescence, which normally is a challenging time for all teens.³³

Compared to their non-neglected peers, children who have been neglected also have higher rates of emotional and behavioral problems such as more negative emotions, poorer impulse control, less confidence, and reduced assertiveness in problem solving. Compared to other forms of maltreatment, significant neglect is associated with increased risk for personality disorders, anxiety, and depression. Although the majority of adults who were neglected as children do not engage in criminal activity, the odds are greater that they will be arrested for violent crimes or be diagnosed with antisocial personality disorder compared to adults who were not maltreated as children. Severely neglected children are more apt to experience

academic delays and to be rated as inattentive and hyperactive by teachers. They exhibit lower IQ scores, have poorer reading skills, and are less likely to graduate from high school.³⁴ Their economic and personal achievements typically are lower than their peers.

What Policies and Programs Work

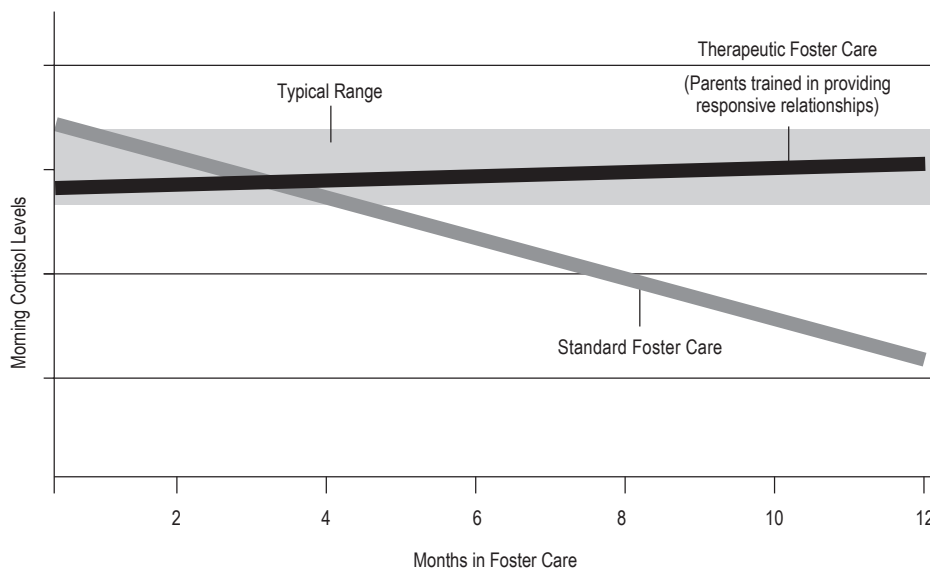
With promising interventions, children who have been neglected and then placed in supportive environments have the capacity to recover. Several promising policies and programs have been able to transform the lives of children placed in foster care and also promote secure attachments in young children who continue to live with their families (see examples in the Magnuson chapter in this report).

Only one program is highlighted here—the Multidimensional Treatment Foster Care for Preschoolers intervention. This program targeted the social-emotional needs of young children living in foster care (most who had been victims of neglect). The intervention includes addressing potential problems that the adults who care for the children may experience. Targeting both children and adults results in more stable and sustainable placements, and even in biological changes that restored preschoolers’ cortisol to normal levels.³⁵ The dramatic improvements that supportive relationships can provide is illustrated in Figure 3 below.

Interventions that target both children and adults have been shown to restore preschoolers’ cortisol to normal levels.

Pat Levitt

Figure 3. Supportive Relationships Restore Disrupted Stress Response



Note: Children in the child welfare system, many suffering from serious neglect, can see dramatic improvements in stress response with the provision of supportive relationships. Without such relationships, children in this study who received standard foster care showed suppressed levels of the stress hormone cortisol, which worsened the longer they were in foster care. Foster parents trained to provide responsive relationships through the Multidimensional Treatment Foster Care for Preschoolers intervention were able to restore foster children’s stress hormones to typical levels, as measured in a control group of children from the same community who were not in foster care. Graphic courtesy of the Center on the Developing Child at Harvard University. Data source: Fisher, P. A., Stoolmiller, M., Gunnar, M. R., & Burraston, B. O. (2007). <http://developingchild.harvard.edu>

Implications for Policymakers

Policymakers face two principal questions: (1) What decisions can help ensure that all children receive the caring and responsive relationships they need for healthy brain development that will contribute to a sound economy and a prosperous future? (2) What decisions can help children overcome the impacts of adverse early experiences and exposure to toxic stress?³⁶ Neuroscience cannot tell policymakers what to do. Yet neuroscience can raise important considerations and provide data from research that will help inform policymakers' decisions about developing more effective strategies to prevent toxic stress and promote healthy brain development.³⁷

- 1) Severe neglect is as great a threat to children's health and development as physical abuse, perhaps even greater. Surprisingly, there is still no broad-based agreement on clear and objective criteria regarding how neglect should be defined and when state intervention should be authorized. Despite recent scientific advances, there has been relatively little change in the ways in which services are provided for this highly vulnerable population in the child welfare system. Appropriate and timely referrals are critical.
- 2) Most child welfare agencies have relatively limited capacity to address neglect in young children. Neuroscience has underscored the greater returns for prevention compared to rehabilitation. This suggests a greater need for more effective outreach to families facing the circumstances and conditions that put their children at risk of significant neglect. Beyond socioeconomic hardship, new program strategies can also identify other circumstances that can overwhelm parents such as addictions to alcohol and other drugs, chronic medical conditions, and mental health disorders such as depression. The federal Title IV-E waiver guidelines issued in 2012 offer a promising opportunity to identify families at risk of neglect. Coordination will be needed across service sectors to identify vulnerable children and families as early as possible.
- 3) The timing for interventions is critically important. A consistent and rigorous body of evidence indicates that the sooner neglected children receive appropriate interventions, the less likely they are to demonstrate long-term, adverse effects. In various studies, the benchmark ages for removing children from extreme deprivation has been identified as 6, 12, or 24 months of age. For example, young children in Romania who were removed from institutions and placed in high-quality foster care homes prior to 24 months of age showed remarkable gains in thinking and memory. In general, the more profound and pervasive the deprivation, the earlier the child needs to be removed to foster the greatest recovery.
- 4) Science has well documented that children who are supported in their families or removed from neglectful conditions and placed in supportive foster care have the capacity to recover. However, simply removing a young child from conditions of severe neglect does not guarantee positive outcomes. To heal, severely neglected children need therapy

Simply removing a young child from conditions of severe neglect does not guarantee positive outcomes.

and supportive care, often for 6 to 9 months or longer. When such support occurs, even institutionalized children have shown demonstrated improvements in brain activity as measured by EEG. Without supportive services, neglected children remain at high risk for a host of problems that persist into adolescence and adulthood.

- 5) Child neglect does not occur in isolation from other family problems. Evidence-based interventions that address parental depression, addiction to substances, economic hardship, social isolation, and medical challenges can have a very positive impact on child outcomes, even though they do not specifically address children.
- 6) To provide access to non-stigmatizing, community-based services, cooperation will be needed among policymakers, family court judges, and practitioners.

Conclusion

Growing research in the fields of neuroscience, molecular biology, genomics, and epigenetics tells us that when children experience stress in the absence of supportive relationships from their parents and caregivers, this can activate young children's stress response systems. In turn, this can lead to toxic stress that is built into the architecture of the brain in ways that can have consequences for a lifetime. The importance of caring and responsive relationships is not new, but what is new are the ways in which children's stress responses can be brought back to normal by relationships with caring, responsive parents and high-quality providers of care and education.³⁸

Policymakers can use this cutting-edge research on early brain development to formulate and implement innovative policies designed to (a) improve all children's learning and behavior, and (b) overcome the impacts of adverse early experiences and exposure to toxic stress. Failing to do so misses out on a key window of opportunity for building a healthy brain architecture.³⁹ Influencing a baby's brain early in life is easier than reviving it later, and far less expensive than the subsequent costs of remedial education, clinical treatment, public assistance, incarceration, and so forth.⁴⁰ Building a strong foundation for children's early development is a formula for human capital development and community success that provides a solid foundation for economic productivity, responsible citizenship, and a prosperous society.

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Influencing a baby's brain early in life is easier and far less expensive than the subsequent costs of remedial education, clinical treatment, public assistance, incarceration, etc.

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Programs and Policies to Foster Early Development: What Works?

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Wisconsin can build on several initiatives to position the state as a leader in early childhood policy. To do it right, public-private partnerships that share responsibility offer greater potential than either government or private action alone. To guide their decisions, policymakers can look to evaluations of promising interventions that transform the lives of young children who have experienced trauma, along with data on the track record of Wisconsin policies. As of 2012, Wisconsin ranked 4th in the nation for access to public pre-k programs for 4-year-olds, but 21st for 3-year-olds. In 2010, Wisconsin established YoungStar, its 5-star child care quality improvement and rating system. Currently, 70% of rated programs in the state are at the 2-star level; the largest barrier for providers to move up to 3 stars is meeting educational standards for staff in a workforce with high rates of turnover. Wisconsin's two public-private programs for improving educational attainment and compensation for the early childhood workforce—T.E.A.C.H. and R.E.W.A.R.D.—both have long waiting lists. When deciding what to invest in, the key is choosing evidence-based strategies that are implemented well with funds set aside for evaluation. The up-front costs may be less important than the long-term return on investment; programs that cost less because they employ less competent staff are a waste of money if they do not have the expertise it takes to produce impacts. When deciding who to target, state and local data can identify those most vulnerable—children with special needs; families of color; those experiencing toxic stress; families facing health or financial challenges; and so forth.

The nation's future prosperity and security depends on the well-being of our children beginning early in life. Early experiences influence the architecture of the brain, resulting in either a strong or weak foundation for later health and learning. Four decades of rigorous evaluations from a small number of programs demonstrate that it is possible to improve outcomes for vulnerable children that yield benefits to society that far exceed costs. Evaluations have also shown that some programs that are poorly designed and implemented have few beneficial effects. Taken together, science can now provide policymakers with guidance on how to build programs and policies that will improve the life chances of our most vulnerable children.

The Center on the Developing Child at Harvard University has identified the most rigorous and well-accepted findings that can guide policymakers involved in designing early childhood policy. The studies suggest that there is no silver bullet—no single policy or program that will ensure healthy development for all families and children. To do it right, shared responsibility through public-private partnerships holds greater promise than government action alone.¹

Katherine Magnuson

The nation's future prosperity and security depends on the well-being of our children beginning early in life.

For vulnerable, first-time mothers, home visiting programs can produce cost-effective, long-term benefits for both children and parents.

- 1) For pregnant women and children, ensuring access to basic medical care can help address threats to healthy development. For example, inadequate prenatal and early childhood nutrition can be detected before it affects brain development, and maternal depression can be addressed before it affects child development.
- 2) For vulnerable, first-time mothers, home visiting programs can produce cost-effective, long-term benefits for both children and parents. In particular, the *Nurse-Family Partnership Program* that begins prenatally and extends to the second year of life, has been studied extensively and consistently demonstrates positive impacts. In contrast, low-intensity home visitation programs with poorly trained staff and limited family engagement have demonstrated few consistent impacts.
- 3) For children, particularly those from low-income families, high-quality, center-based early education programs can enhance academic skills and school adjustment.
- 4) For families experiencing significant adversity, two-generation programs that provide high-quality care and education for young children, combined with direct supports for parents, can have positive impacts on both parents and children. Still unclear is what program components work best for which families and children.
- 5) For young children experiencing toxic stress, intensive targeted programs are needed and can be beneficial. For example, if the toxic stress stems from maternal depression, the interventions that work best treat the mother's depression and also teach ways to protect their children from its negative consequences.
- 6) For families living under the poverty level and particularly among fragile families, policies that invest in parents' income improved their children's school performance and (sometimes) their social development. Studies of three programs that supplemented the earnings of low-wage workers by providing monthly cash payments found improvements in children's academic skills and behavior.
- 7) For pregnant mothers and young children, policies that protect children from toxins in the environment, such as lead and mercury, can prevent damage to the developing brain. For example, increasing levels of mercury, particularly in fish, pose a growing threat to the immature brains of fetuses and young children.

This chapter overviews what we know about effective programs and policy elements that promote healthy brain development for young children in different contexts—within family environments, in out-of-home early childhood care and education settings, and through interventions for children experiencing extreme stress. Each section describes successful programs, identifies elements of effectiveness, and discusses how the information applies to Wisconsin. This chapter closes with implications for Wisconsin policymakers on evidence-based and promising policies and programs, and effective implementation strategies.

Promoting Healthy Development in Family Settings

Within family settings, early brain development is influenced by a range of factors including parenting practices, parental stress, family economic security, health care, and nutrition. Policies and programs that effectively support families' capacities to nurture children during their early years can set them on a trajectory toward success as adults.

Home Visiting

The transition to parenting can be challenging and stressful, especially for first-time parents with few resources. Home visiting provides support at a critical juncture in the life of a family. The *Nurse-Family Partnership* is one program model that has been rigorously evaluated and consistently demonstrated positive and long-lasting impacts on both parents and children across a range of outcomes.² The program provides home visits to first-time mothers from disadvantaged backgrounds, starting prenatally and continuing until the child turns two. Trained nurses visit families approximately 50 times over the course of the program, weekly during the prenatal and early infancy periods, for about 75-90 minutes each visit. Visits focus on improving prenatal care, teaching responsive parenting practices, and coaching mothers to better plan for the future (e.g., in completing education, finding work, involving the father in the family, planning for subsequent pregnancies).

Many home visiting programs exist, but not all have been extensively tested or proven effective. Programs are more likely to be effective when they target those at high risk, employ highly skilled and supervised staff, and are able to engage families. Programs with lower intensity (e.g., fewer visits, shorter durations) or limited family engagement have been found to be less effective.³

In Wisconsin, several different home visiting programs are in place, but they are administered locally and the total number of families served is not known. In one survey, 73% of county child welfare offices reported offering at least one home visiting program.⁴ The *Parents as Teachers* model of home visiting reported serving 3,405 children in 45 sites. The *Family Foundations* program reported serving 530 children in 10 sites, and the *Empowering Families Milwaukee* program served 217 children in one site. A *Nurse-Family Partnership* program operates in Milwaukee, but how many children it serves is not known. In addition, 2,425 children received home visiting services from Head Start and Early Head Start programs. (Note: not all counts are from the same year, and some children may have been counted more than once). No precise number exists of at-risk mothers in Wisconsin who could potentially benefit from home visiting programs. However, rough estimates using available birth records and maternal education data suggest that only a fraction of at-risk mothers are being served.⁵

Health and Nutrition

Access to high-quality health care and adequate nutrition are critical during prenatal development and early childhood.⁶ In Wisconsin, children have high levels of access and take-up of public health insurance programs (through Medicaid

Home-visiting programs with lower intensity (e.g., fewer visits, shorter durations) or limited family engagement are less effective.

and BadgerCare), and relatively good health status overall.^{7,8} In 2011, an estimated 7% of children age 6 and younger did not have health insurance;⁹ however, health insurance coverage is a crude proxy for access to good care. Indeed, insurance does not ensure reliable access to primary care, and more than 25% of insured children may not have adequate coverage for all of their health needs.¹⁰ Furthermore, health outcomes are significantly poorer for children of color, especially African American and Native American children. Children's coverage will also likely be affected by upcoming changes to BadgerCare Plus. Currently, all children under 19 are eligible for state coverage, as well as parents with incomes at or below 200% of the federal poverty threshold. Starting in April 2014, eligibility will be limited to children in families with incomes at or below 300% of the poverty threshold, and to parents who make at or below 100% of the poverty threshold.¹¹

In regard to early nutrition, 11% of Wisconsin households reported food insecurity in 2012, which means these families faced difficulty providing enough food to all their members, at least sometime during the year, due to lack of resources. This rate tends to be much higher for households with children, single-mother families, Black and Hispanic families, and those living in large cities.¹²

In 2012, 30% of Wisconsin children were enrolled in FoodShare, Wisconsin's food stamp program.

Two federal programs address food insecurity among children within the family context. FoodShare (Wisconsin's food stamp program) provides support to low-income families whose household income falls below 200% of the federal poverty threshold. As of 2012, 30% of Wisconsin children were enrolled in FoodShare.¹³ Children under age 5 make up the largest age group receiving FoodShare, representing about 13% of all recipients in the state in 2013.¹⁴ FoodShare benefits were expanded in 2009 under the American Recovery and Reinvestment Act, but benefit levels have recently gone back down.¹⁵

The Women, Infants, and Children (WIC) supplemental food program provides nutrition assistance to pregnant or postpartum women, infants, and children up to age 5 with household incomes up to 185% of the federal poverty threshold. In 2010, WIC served 125,026 individuals in Wisconsin out of an estimated 227,423 who were eligible, meaning that 55% of eligible children and mothers were covered.¹⁶

Parental Work Support

Extensive research has demonstrated that persistent and deep poverty is harmful to children. In 2012, 16% of Wisconsin children lived below the federal poverty threshold, and an additional 19% lived in families with incomes less than twice the federal poverty threshold. Overall, these child poverty rates are slightly lower than national averages, but the rates are notably higher in certain Wisconsin counties and for particular types of families.¹⁷

The state provides economic supports to families through several programs. Wisconsin offers the Homestead Tax Credit Program, designed to reduce the burden of property tax on low-income families. For 2010 claims, 248,014 filers received an average credit of \$536.¹⁸ Wisconsin supplements the federal refundable Earned Income Tax Credit (EITC) for working poor families with children. The EITC is considered a particularly effective policy for encouraging employment

and lifting families out of poverty.¹⁹ In general, EITC benefits expanded over the last decade, but Wisconsin reduced state benefit levels in 2011. For 2010 claims, 268,171 filers received the state tax credit with total payments amounting to almost \$101 million, an average of \$376 per family.²⁰

Wisconsin Works (W-2) provides income support to families in poverty if work requirements are met. In 2003, 14,997 adult participants and 29,918 children were served by W-2, with 73% of participants having at least one child age 6 or younger.²¹ Viewing W-2 through the family impact lens, W-2 could be more supportive of families with special needs if work requirements were reduced.

The Earned Income Tax Credit is an effective policy for encouraging employment and lifting families out of poverty.

Promoting Healthy Development in Early Childhood Care and Education Settings

Out-of-home early childhood care and education settings include formal and informal child care and preschool programs which are critical supports for working parents. Evidence indicates that these settings have a significant impact on child development and well-being, but impacts vary greatly by program quality. High-quality programs show substantial positive effects on children's development and life outcomes, whereas low-quality programs can be detrimental.

Access, quality, and affordability of early childhood programs is affected by a number of state policy levers. Most prominently, the state (1) regulates child care providers; (2) assesses their quality; (3) provides child care subsidies for low-income families to access licensed child care providers; and (4) offers publicly funded early childhood education, particularly through prekindergarten programs.²²

Child Care Regulation

The state regulates child care providers through the Bureau of Early Child Care Regulation in the Department of Children and Families. Regulation standards establish minimum health and safety practices and requirements, including maximum child-to-staff ratios. Wisconsin requires that all facilities serving more than four children in a center- or home-based setting be licensed. In 2010, about 5,000 such facilities were licensed to serve 209,017 children (of all ages).²³ It is difficult to assess whether the supply meets the demand because there are no data on the number of children in unlicensed care or the number of parents who want care, but do not use it.

Regulation and licensing requirements are typically viewed as necessary but not sufficient for promoting children's well-being. They set basic quality standards, but are not enough to raise program quality to the point of improving developmental outcomes.²⁴ Moreover, regulations that are too strict can have the unintended consequences of increasing the cost and limiting the availability of center-based care.²⁵

Child Care Quality Assessment and Improvement

To promote quality improvement in child care programs, several states have recently implemented Tiered Quality Rating and Improvement Systems. These

systems have been promoted at the federal level by Early Learning Challenge Grants. Child care rating systems serve to (1) establish a standard measure of program quality and rate programs on a common metric; (2) utilize market forces by making ratings publicly available so parents can compare and select programs based on the ratings; and (3) provide incentives, resources, and technical assistance to providers to improve program quality. Rating systems are expected to enhance quality by increasing both the demand for and supply of high-quality care.

Wisconsin's child care quality improvement and rating system, YoungStar, was established in 2010. YoungStar provides participating child care providers with a 1- to 5-star rating based on scores in four categories: staff education and training, learning environment and curriculum, business and professional practices, and health and wellness.²⁶ Most providers currently in the system have received a 2-star rating. The goal is for providers to move up the ladder to a 3-, 4-, or 5-star rating. YoungStar includes training, technical assistance, and resources to help providers improve. Those who receive 4- or 5-star ratings are eligible for financial bonuses through state child care subsidies, whereas 2-star providers face a financial penalty.

Quality ratings of Wisconsin child care programs have been improving, but 62% of rated providers are at the 2-star level.

One report indicates that as of July 2013, 65% of children receiving child care subsidies were enrolled in 3- to 5-star programs, and the percentage of children in higher-rated programs is increasing over time. The number of programs participating in YoungStar and the number receiving higher ratings has also been increasing with time. However, 62% of rated providers in the state are still at the 2-star level.²⁷ These 2-star providers provide a safe and healthy environment for children, but they do not meet higher standards of quality. The largest barrier for these programs in moving to the 3-star level appears to be meeting educational standards for staff, particularly among a workforce with high turnover. Overall, the early childhood workforce in Wisconsin, as in the rest of the country, is a low-paid sector with high staff turnover and limited levels of educational attainment.²⁸

Wisconsin has in place two public-private programs for increasing early childhood caregiver and teacher skills. T.E.A.C.H. is a statewide scholarship program that grants financial awards to early childhood teachers to engage in professional development while continuing their employment. T.E.A.C.H. scholarship recipients have lower turnover rates and higher hourly wages, on average, than nonrecipients. R.E.W.A.R.D. is a stipend program of compensation and retention for the early care and education workforce. Annual incremental salary supplements are awarded to individuals based on their educational attainments and longevity in the field. The application process for both programs is administered by the Wisconsin Early Childhood Association. Recent summary reports indicate that these programs are popular and have long waiting lists.^{29,30,31}

Child Care Subsidies

The state also plays a role in child care access and affordability through child care subsidies. The Department of Children and Families operates the Wisconsin Shares program for low-income families with incomes up to 185% of the federal poverty threshold. Over two thirds of licensed center- and family-based child care providers participate in the *Wisconsin Shares* program. As of 2009, the

program served about 59,000 children, 64% of whom were under the age of 6. Of the families who received subsidies, 90% were single parent families and 90% had incomes at or below 166% of the federal poverty threshold.^{32,33,34} Parents are required to make copayments based on a percentage of their family income. All providers who receive Wisconsin Shares subsidies are required to participate in the YoungStar quality rating system.

Compared to other states, Wisconsin has historically offered higher state reimbursements to providers (at or above 75% of the market rate) and made subsidies available to more families (allowing incomes to rise up to 200% of the federal poverty threshold). However, in recent years the subsidy rates have been frozen and thus the value of the subsidies has declined significantly. Only 22% of children aged birth to 3, and 38% of children aged 3 to 5 from low-income families were enrolled in child care subsidy programs in 2009.³⁵ This low take-up rate may reflect parents' preferences for other care arrangements (e.g., parental, relative, or non-licensed care), the inability to meet other eligibility criteria (e.g., exceeding the initial income criteria), and/or a lack of knowledge about the program. According to a small survey of state-licensed child care providers, almost half indicated that they asked families to leave the program because they could not afford their copayment. A better understanding of the reasons why families do or do not access child care subsidies would be helpful for informing policy.

Prekindergarten Programs

Rigorous studies of prekindergarten (pre-k) programs in the United States and other countries have established their effectiveness in improving school readiness and achievement for young children.³⁶ Wisconsin currently supports prekindergarten by providing funding to public school districts, which can choose to run their own pre-k programs or contract them out to Head Start agencies, private centers, or other community-based programs.

Funding and enrollment in pre-k programs have increased substantially over the past several years in Wisconsin and throughout the country. Recent efforts have been made to expand existing programs and increase the number of new programs in districts that did not previously offer any. As of 2012, Wisconsin ranked 4th in the nation for 4-year-olds' access to public pre-k programs; 89% of school districts in the state offered a program and 69% of the state population of 4-year-olds were enrolled in a state-funded program or Head Start. In contrast, there has been less focus on access for 3-year-olds. Wisconsin ranked 21st in the nation for 3-year-old pre-k access; only 10% of the state's population of 3-year-olds were enrolled in a state pre-k program or Head Start.³⁷

One assessment of the quality of Wisconsin's pre-k system comes from the National Institute for Early Education Research, which provides yearly ratings of each state's preschool system based on ten quality benchmarks.³⁸ In the 2011-2012 assessment, Wisconsin met 5 of 10 quality benchmarks for its 4-year-old pre-k system:

- use of comprehensive early learning standards;
- teacher degree of at least a B.A.;

In 2012, Wisconsin ranked 4th in the nation for 4-year-olds' access to public pre-k programs and 21st for 3-year-olds' access.

- specialized teacher training in early childhood education;
- at least 15 hours of teacher in-service training per year; and
- site visits for program monitoring.

The benchmarks that were not met tended to vary based on location or program specifics: pre-k class sizes no larger than 20; teacher-to-student ratios not greater than 1:10; assistant teachers holding at least a Child Development Associate degree; child access to at least one meal per day; and vision, hearing, and health screening services along with referrals and at least one support service (e.g., health services, special education referral, parent conferences, home visits, access to a school social worker).

Increasingly, research suggests looking beyond benchmarks like these. The foundation of school success is based on more than just basic letter and number knowledge. Programs that build executive function skills (e.g., attention, memory) and social skills (e.g., relationships, cooperation) can also help prepare children for success in school, work, and life.³⁹

Promoting Healthy Development for Children Experiencing Extreme Stress

Some children are exposed to adverse experiences early in life that cause prolonged or extreme levels of stress. This stress results in a physiological reaction to an environmental context such as severe maternal depression, parental substance abuse or addiction, family violence, or child maltreatment, that is not buffered by a caring relationship. These children may need more intensive and targeted support in order to alleviate the effects of toxic stress. For example, if a parent abuses substances, they will most likely benefit from an intervention that focuses specifically on addiction and also teaches them how to avoid damaging effects on their children.⁴⁰

When young children are having trouble focusing or controlling impulses, too often they are over medicated or expelled from preschool.

Teachers are often the first to notice when young children are having trouble controlling impulses, focusing attention, staying organized, and following instructions. These skill deficits are sometimes labeled “bad behavior” and the children are labeled “uncooperative.” Too often, the result is that children are either over medicated or expelled from preschool. Teachers and other caregivers need to be better equipped to understand and deal with these behavioral and learning challenges.⁴¹

The Center on the Developing Child at Harvard has identified three promising interventions for addressing the needs of children who have experienced significant neglect and maltreatment. These programs are shown to be effective in improving a variety of children’s outcomes.⁴²

- The ***Attachment and Biobehavioral Catch-Up (ABC)*** Intervention is a 10-week program for caregivers of young children who have experienced maltreatment or disruptions in their home life. Caregivers (birth parents, foster parents, relatives providing care) are taught to engage with young children in more sensitive, responsive, and nurturing ways that foster children’s regulatory abilities. Evaluations show that children in the

program developed more secure attachments to their caregivers and were better able to regulate their behaviors and stress levels. (Developed by Mary Dozier at the University of Delaware Infant Caregiver Lab: <http://www.infantcaregiverproject.com/>)

- The ***Child-Parent Psychotherapy (CPP)*** treatment model is designed for young children (aged 0-5) who have experienced interpersonal violence or other traumatic events. The focus is improving children's social-emotional, behavioral, and cognitive functioning through building trust in the parent-child relationship following the trauma. The program enhances the parent's capacity to help the child feel safe, while also addressing cultural, socioeconomic, and immigration-related stressors. Five rigorous studies have documented the program's effectiveness in improving children's attachments, increasing parents' responsiveness, and decreasing children's behavior problems and stress responses. (Developed by Alicia Lieberman and Patricia Van Horn at the University of California San Francisco Child Trauma Research Program: <http://psych.ucsf.edu/research.aspx?id=1554>)
- ***Multidimensional Treatment Foster Care for Preschoolers*** is an early intervention service model for 3- to 6-year-old children in foster care, many of whom have experienced neglect. The program focuses on training caregivers to provide positive, responsive, and consistent environments for children, reinforce positive behaviors, and set effective limits. Children also engage in behavioral therapy and socialization activities. The program has been shown to improve attachment behaviors, reduce behavioral problems, and alleviate stress for participating children. (Developed by Phil Fisher at the Oregon Social Learning Center: <http://www.mtfc.com/mtfcp.html>)

Three programs have shown promising results in increasing children's secure attachment, decreasing behavior problems, and regulating stress levels.

Implications for Wisconsin Policymakers on Making Effective Investments in Early Childhood Policy

A wide range of early childhood programs and policies exist for promoting healthy brain development through a variety of policy levers. Effectiveness does not necessarily depend on one specific program, approach, or mode of delivery. Rather, research provides two kinds of information that can be valuable to policymakers including: (a) evidence-based and promising policies and programs, and (b) effective strategies to implement them so they achieve their potential impact. Each are reviewed, in turn, below.

Evidence-Based and Promising Policies and Programs

Some of the policy and program options listed here will be general, but several will focus on the Wisconsin policies and programs that are reviewed in this chapter.

- Wisconsin has taken the important step of developing a market-based, quality rating system for child care providers. Currently, 70% of rated programs in the state are at the 2-star level. Continued efforts are needed

to ensure that programs are able to improve their quality and provide high-quality care at costs that families can afford.

- The relationships that children have with caregivers is very important to their healthy development. This argues for a focus on the skills and personal attributes of caregivers, including their wages and benefits.⁴³ In Wisconsin, the early childhood care and education workforce is marked by high turnover among staff with limited education. Two public-private programs in Wisconsin for improving educational attainment and compensation among the early childhood workforce—T.E.A.C.H. and R.E.W.A.R.D.—have long waiting lists. Building a strong workforce requires more attention to professional development programs and incentives for good teachers to stay in the field.
- Wisconsin’s prekindergarten program for 4-year-olds has been expanding. Still, high-quality preschool is not accessible to many 3-year-olds who would benefit from these early learning experiences. Ensuring that these programs provide positive learning environments is critical to making sure that children enter school ready to learn.
- In Wisconsin, no firm numbers are available, but rough estimates suggest that only a fraction of at-risk mothers receive home visiting. Evaluations of effectiveness could be done to assess whether home visiting programs are reaching the potential demonstrated by the Nurse-Family Partnership Program.
- For Wisconsin households that are experiencing food insecurity, take-up rates could be improved for federal food assistance and other nutrition assistance programs. Special attention may be needed for families experiencing high rates of food insecurity—those with children, single-parents, Black and Hispanic families, and those residing in large cities.
- Poverty can negatively affect children’s development, possibly in part by increasing the odds that children experience prolonged stress responses. For those parents who are working at low-wage jobs, state policymakers could consider increasing the state Earned Income Tax Credit, as well as other measures that will increase work and lift families out of poverty.
- To reduce toxic stress, interventions must treat what is causing the stress in the family. A parent who is depressed needs a different intervention than a parent who is addicted to alcohol or other substances. In addition, parents need information about how their specific personal challenges can affect their children. Child welfare agencies need at their disposal evidence-based programs that can support parents to make improvements in their behavior. High-quality early child care and education programs, home visiting, parenting education, and family support programs need to be better prepared to address the challenges faced by those who experience toxic stress with focused early intervention programs.^{44,45}
- Limited expert help is available for parents, teachers, and providers of early care and education who are dealing with behavioral difficulties in

Families experiencing high rates of food insecurity include those with children, single-parents, Black and Hispanic families, and those residing in large cities.

young children during the preschool years. Limited access to clinical help in mental health for very young children and their families is also a problem, in general, and particularly for child welfare agencies that are mandated to assess the extent of risk children are exposed to.^{46,47}

- Young children who experience anxiety and trauma can recover if given early treatment. Three promising interventions are identified in this chapter—the Attachment and Biobehavioral Catch-Up Intervention, Child-Parent Psychotherapy, and Multidimensional Treatment Foster Care for Preschoolers.⁴⁸
- In recent years, science has shown connections between children’s experience of toxic stress primarily as a result of maltreatment and children’s executive functioning—their ability to control impulses, focus attention, stay organized, and follow instructions. Based on emerging evidence, focused programs have demonstrated short-term impacts in strengthening vulnerable young children’s executive functioning, some accompanied by specific changes in the brain. Building executive functioning skills in early childhood programs can be as important to later school success as number and early literacy skills.^{49,50}
- Typically, policy prescriptions for the abuse or neglect of a child involve the criminal justice system more than the physical and mental health system. However, when young children are abused or neglected, it should also be considered and treated as matter of child health and development in the context of a family in crisis. For accurate assessment and effective treatment, greater access to both early childhood development and adult mental health services is needed.⁵¹

Child abuse or neglect should be considered and treated as matter of child development in the context of a family in crisis.

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Effective Implementation to Ensure Policies and Programs Achieve Their Demonstrated Potential

- When it comes to choosing among policies and programs, the key is selecting strategies that have documented success, implementing them well, and ensuring that funds are available for program evaluation and continuous program improvement.
- When determining who to target, state and local data can identify those most vulnerable—children and with special needs; families of color; those experiencing toxic stress; families facing health or financial challenges; and so forth.
- When determining whether a policy or program is a good investment, consider not only the up-front costs, but also the extent to which the effort will result in long-run benefits that might provide paybacks such as cost savings. The return on investment, which summarizes the full costs and benefits of the program, is more important than just the up-front costs.
- When it comes to staffing, “programs that cost less because they employ less skilled staff are a waste of money if they do not have the expertise needed to produce measurable impacts” (p. 22).⁵²

Conclusion

Shared responsibility through public-private partnerships offers greater promise than either government or private action alone.

Researchers at the Center on the Developing Child ask, “Can or should government do it all?” They answer no, saying: “The magnitude of the challenges and the considerable up-front costs of doing things right suggest that shared responsibility through public-private partnerships offers greater promise than either government or private action alone. Both will benefit greatly in the long term” (p. 28).⁵³

Wisconsin has several promising initiatives they can preserve and build on to improve the quality of their investments in children. The state has a history of providing access to health care for children and income support to working parents. The YoungStar program shows some promise for monitoring and improving child care quality and increasing the number of high-quality options available to parents. There has been increasing public funding for providing one year of prekindergarten education. In 2012, the Governor’s Advisory Council on Early Education was awarded a grant under the federal Race-to-the-Top Early Learning Challenge competition to continue to build and improve the statewide pre-k system.⁵⁴ Policymakers can build on these successes, and position Wisconsin as a leader in early childhood policy by looking to the solid body of research evidence to ensure that the state’s children get a great start in life.

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THE FAMILY IMPACT GUIDE FOR POLICYMAKERS

Viewing Policies Through a Family Lens

- ▶ Most policymakers would not think of passing a bill without asking, “**What’s the economic impact?**”
- ▶ This guide encourages policymakers to ask, “**What is the impact of this policy on families?**” “**Would involving families result in more effective and efficient policies?**”

When economic questions arise, economists are routinely consulted for economic data and forecasts. When family questions arise, policymakers can turn to family scientists for data and forecasts to make evidence-informed decisions. The Family Impact Seminars developed this guide to highlight the importance of family impact and to bring the family impact lens to policy decisions.

WHY FAMILY IMPACT IS IMPORTANT TO POLICYMAKERS

Families are the most humane and economical way known for raising the next generation. Families financially support their members, and care for those who cannot always care for themselves—the elderly, frail, ill, and disabled. Yet families can be harmed by stressful conditions—the inability to find a job, afford health insurance, secure quality child care, and send their kids to good schools. Innovative policymakers use research evidence to invest in family policies and programs that work, and to cut those that don’t. Keeping the family foundation strong today pays off tomorrow. Families are a cornerstone for raising responsible children who become caring, committed contributors in a strong democracy, and competent workers in a sound economy.¹

In polls, state legislative leaders endorsed families as a sure-fire vote winner.² Except for two weeks, family-oriented words appeared every week Congress was in session for over a decade; these mentions of *family* cut across gender and political party.³ The symbol of *family* appeals to common values that rise above politics and hold the potential to provide common ground. However, family considerations are not systematically addressed in the normal routines of policymaking.

HOW THE FAMILY IMPACT LENS HAS BENEFITED POLICY DECISIONS

- ▶ In one Midwestern state, using the family impact lens revealed differences in program eligibility depending upon marital status. For example, seniors were less apt to be eligible for the state’s prescription drug program if they were married than if they were unmarried but living together.
- ▶ In a rigorous cost-benefit analysis of 571 criminal justice programs, those most cost-beneficial in reducing future crime were targeted at juveniles. Of these, the five most cost-beneficial rehabilitation programs and the single most cost-beneficial prevention program were family-focused approaches.⁴
- ▶ For preventing youth substance use, programs that changed family dynamics were found to be, on average, over nine times more effective than programs that focused only on youth.⁵

QUESTIONS POLICYMAKERS CAN ASK TO BRING THE FAMILY IMPACT LENS TO POLICY DECISIONS:

- ▶ **How are families affected by the issue?**
- ▶ **In what ways, if any, do families contribute to the issue?**
- ▶ **Would involving families result in more effective and efficient policies?**

HOW POLICYMAKERS CAN EXAMINE FAMILY IMPACTS OF POLICY DECISIONS

Nearly all policy decisions have some effect on family life. Some decisions affect families directly (e.g., child support or long-term care), and some indirectly (e.g., corrections or jobs). The family impact discussion starters below can help policymakers figure out what those family impacts are and how family considerations can be taken into account, particularly as policies are being developed.

FAMILY IMPACT DISCUSSION STARTERS

How will the policy, program, or practice:

- ▶ **support rather than substitute for family members' responsibilities to one another?**
- ▶ **reinforce family members' commitment to each other and to the stability of the family unit?**
- ▶ **recognize the power and persistence of family ties, and promote healthy couple, marital, and parental relationships?**
- ▶ **acknowledge and respect the diversity of family life (e.g., different cultural, ethnic, racial, and religious backgrounds; various geographic locations and socioeconomic statuses; families with members who have special needs; and families at different stages of the life cycle)?**
- ▶ **engage and work in partnership with families?**

Ask for a full Family Impact Analysis

Some issues warrant a full family impact analysis to more deeply examine the intended and unintended consequences of policies on family well-being. To conduct an analysis, use the expertise of (1) family scientists who understand families and (2) policy analysts who understand the specifics of the issue.

- ▶ Family scientists in your state can be found at <http://www.familyimpactseminars.org>
- ▶ Policy analysts can be found on your staff, in the legislature's nonpartisan service agencies, at university policy schools, etc.

Apply the Results

Viewing issues through the family impact lens rarely results in overwhelming support for or opposition to a policy or program. Instead, it can identify how specific family types and particular family functions are affected. These results raise considerations that policymakers can use to make policy decisions that strengthen the many contributions families make for the benefit of their members and the good of society.

ADDITIONAL RESOURCES

Several family impact tools and procedures are available on the website of the Family Impact Institute at <http://www.familyimpactseminars.org>.

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