



WISCONSIN
FAMILY
IMPACT
SEMINARS
JAN '14

Issue Brief

Investing in Early Childhood Development is Smart Economic Development

The Science of Early Brain Development

Dr. Arthur Rolnick was one of the speakers at the 32nd Wisconsin Family Impact Seminar on *The Science of Early Brain Development*. He previously served as senior vice president at the Federal Reserve Bank of Minneapolis, and as an associate economist with the Federal Open Market Committee—the monetary policymaking body for the Federal Reserve System. This issue brief summarizes his seminar presentation.

ADDITIONAL INFO

Dr. Rolnick's Family Impact Seminar presentation can be viewed at: youtu.be/ENrDuHanos. His chapter is available in the briefing report edited by Professor and Extension Specialist Olivia Little at familyimpactseminars.org/s_wfis32report.pdf.

The Wisconsin Family Impact Seminars are 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.

For the last 20 years, local and state 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 using government subsidies to lure new companies. These bidding wars are shortsighted because jobs are not created, they are only relocated. When viewed from a national perspective, the public return is at most zero. 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, in 1993, the wages of a worker with an undergraduate degree exceeded a worker with a high school degree by roughly 40%. Recently, the wages of a worker with a graduate degree exceeded those of a worker with a high school degree by over 100%. Yet knowing we need a highly educated workforce does not tell policymakers where to invest limited public resources.

Investing in early childhood development is investing in economic development.

The cost benefit of early childhood programs has been evaluated using our most rigorous research designs. The return on early childhood programs for at-risk families far exceeds the return on most economic investments. For every \$1 invested in high-quality early childhood programs, there is a return of \$4 to \$16 to program participants and to society as a whole. Annual internal rates of return (adjusted for inflation) range between 7% and 18%. This far exceeds the return on most economic investments, both public and private.

Society benefits the most from early childhood education programs. Program participants do benefit from higher after-tax earnings and fringe benefits. Yet 80% of the benefits go to society through higher worker productivity, lower education costs, reduced crime, and less

government assistance. In fact, early childhood education is like a low-risk, blue chip stock that pays extraordinary dividends that are long-lasting.

Scaling up high-quality child care programs that are able to deliver on such high returns remains a challenge.

To ensure that early childhood programs are effective, high-quality, scalable, and sustainable, requires several key features. None is more important than parent involvement and empowerment. In addition, it is important to intervene early, focus most on at-risk children, incorporate quality assurance, provide educational support, and evaluate the intended outcomes.

In Minnesota, \$20 million of private funding was raised to pilot research-based approaches for improving early childhood education in several communities.

Two flagship programs were funded and evaluated: 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 provides home visiting mentors and tuition for children to attend highly-rated, child care programs. Minnesota's two-pronged approach improved both the availability of high-quality child care and children's outcomes.

These programs increased low-income children's access to high-quality, early childhood programs by 55% in the targeted areas. Prior to the programs, 57% of children were in unlicensed care. After the programs, 100% of children were in highly-rated, early childhood programs. By kindergarten, children attending programs with high-quality ratings showed significant gains in language, early literacy, and social competence, all shown to predict later school success. Gains were especially high for low-income children, many of whom went from very low performance when they entered kindergarten to performing at age-level. ■



Programs and Policies to Foster Early Development

What Works: Part 1 of 2

The Science of Early Brain Development

Dr. Katherine Magnuson authored one chapter of the briefing report for the 32nd Wisconsin Family Impact Seminar on *The Science of Early Brain Development*. She is a professor of Social Work and Associate Director of the Institute for Research on Poverty at the University of Wisconsin-Madison. Dr. Magnuson has written over 75 publications on her research. This brief summarizes her seminar briefing report chapter.

ADDITIONAL INFO

Dr. Magnuson's chapter is available in the seminar briefing report edited by Prof. and Extension Specialist Karen Bogenschneider and Olivia Little at familyimpactseminars.org/s_wifis32report.pdf.

The Wisconsin Family Impact Seminars are 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.

Four decades of rigorous evaluations from a small number of programs demonstrate it is possible to improve outcomes for vulnerable children that yield benefits to society that far exceed their costs. Evaluations also show that poorly designed and implemented programs have few beneficial effects. The upfront 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. Data can be used to target the most vulnerable—children with special needs; families of color; those experiencing toxic stress, health challenges, and financial hardship; etc.

For pregnant women and children, ensuring access to basic medical care can help address threats to healthy development. Inadequate prenatal and early childhood nutrition can be detected before it affects a baby's brain. Maternal depression can be addressed before it affects child development.

Protecting pregnant mothers and young children from environmental toxins such as lead and mercury can prevent damage to the developing brain. Increasing mercury levels, particularly in fish, pose a threat to the brains of fetuses and young children.

Parenting education is central to supporting children's early development. It is a surprise to many that the most common form of toxic stress in childhood is the absence of sensitive, responsive parenting.

For vulnerable first-time mothers, home visiting programs can produce cost-effective, long-term benefits for both children and parents. The home visiting program, the *Nurse-Family Partnership*, consistently demonstrates life-changing and long-lasting impacts on the lives of parents and children. Home visits focus on teaching responsive parenting practices, improving prenatal care, and helping mothers plan for the future. In Wisconsin, several home visiting programs exist but, without evaluation,

we cannot assume positive impacts. Effective programs target those at high risk, employ highly skilled and supervised staff, and are able to effectively engage families.

High-quality early childhood care and education substantially benefits children's development and life outcomes, whereas low-quality programs can be detrimental. Science has shown connections between children's exposure to toxic stress and their executive functioning—the ability to control impulses, focus attention, stay organized, and follow instructions. Based on emerging evidence, focused programs show short-term impacts in strengthening executive functioning—sometimes 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.

Prekindergarten programs improve school readiness and achievement for young children. Wisconsin provides prekindergarten funding to public school districts, which can run their own program or contract them out to Head Start agencies, private centers, or other community-based organizations. 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.

Access to adequate nutrition is critical during prenatal development and early childhood. In 2012, 11% of Wisconsin households reported food insecurity. In fact, 30% of Wisconsin children were enrolled in FoodShare, Wisconsin's food stamp program.

Evidence-based programs can turn around the lives of neglected children. Attachment and Biobehavioral Catch-Up, Child-Parent Psychotherapy, and Multidimensional Treatment Foster Care for Preschoolers show promising results in increasing secure attachment, decreasing behavior problems, and even producing biological changes in the way children's bodies regulate stress. ■



The Science of Early Brain Development

Dr. Dave Riley is an endowed chair in the School of Human Ecology and an Extension Child Development Specialist at UW Madison/Extension. Dr. Riley is well known for writing a series of age-paced parent education newsletters for new parents that reach as many as half of all families giving birth in Wisconsin. His evaluation of a large-scale child care improvement project in Wisconsin resulted in three text books for child care professionals. This issue brief summarizes his seminar presentation.

ADDITIONAL INFO

Dr. Riley's presentation is available on the web at familyimpactseminars.org/s_wifis32ppt_dr.pdf. A briefing report on the science of early brain development edited by Professor and Extension Specialist Karen Bogenschneider and Olivia Little at familyimpactseminars.org/s_wifis32report.pdf.

The Wisconsin Family Impact Seminars are 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.

Programs and Policies to Foster Early Development

What Works (Part 2 of 2)

Rigorous evaluations show that early childhood programs can solve some of our country's most pressing problems in a fiscally responsible way. We can have extraordinary, life-changing, cost-effective impacts on the lives of individuals and our society. As a nation of practical problem solvers, what can we do to foster early development?

The Chicago Child-Parent Center. Funded largely by Title 1, public schools in Chicago operate 24 centers for low-income parents and their children, beginning at age 3. By age 25, participants had higher living standards, higher rates of high school completion, and lower rates of substance abuse, felony arrest, and incarceration. The program returned \$10.15 for every \$1 invested. Schools in Wisconsin could use their Title 1 funds in the same way. State financial incentives could make this local policy choice more possible.

Pre-K. State-funded pre-K programs in Oklahoma, New Mexico, Arkansas, and elsewhere have shown consistent meaningful impacts on early vocabulary and math skills, with stronger impacts for high-risk children. Also, Wisconsin could provide funding to make Head Start available to all eligible families. In a study of siblings, those who attended Head Start were much more likely to graduate from high school, and less likely to be unemployed as young adults.

Mixed-model funding of child care. Wisconsin could reinstate Governor Tommy Thompson's approach of state grants of \$1,500 per child to early childhood programs that commit themselves to quality improvement. Even though this increased program budgets by only 16%, child care quality improved in only a one- or two-year time span. North Carolina's approach, Smart Start, provides state funding to improve child care quality with local control of how to make improvements.

Market-based improvement of the quality of early childhood programs. YoungStar, Wisconsin's 5-star quality rating system, appears to be working. In the last two years, the percent of children in programs rated 3 stars or higher

has risen dramatically. However, 62% of rated providers are still at the 2-star level. The policy questions are whether to increase state reimbursement to keep programs with higher stars in business and how to improve quality in programs with lower stars. The biggest barrier in moving to the 3-star level appears to be meeting education standards for child care staff.

Teach/Reward. Wisconsin child care teachers turn over at the annual rate of 30% to 35%, which suppresses efforts to improve child care quality. The number of college courses a teacher completes has a direct relation to how much children learn in the classroom. Wisconsin's TEACH and REWARD programs address teacher training, pay, and retention. The impact on child care quality or child outcomes is not known, but teachers do become better trained and stay in the early childhood workforce longer.

Intensive home visiting. When evidence-based home visiting programs, like Olds' Nurse Family Partnership, are delivered as designed, we can have a high level of confidence in the powerful, life-changing impacts of these programs that start at an early age. They are not cheap, costing about \$4,000 to \$5,000 per family. But when targeted to high-risk families, they return more dollars to the public than they cost.

Multidimensional Treatment Foster Care. Youth whose foster parents received this training and support benefited in two ways. They spent 60% fewer days in jail the following year, and spent almost twice as much time living with their own parents or relatives (which is one of the program's goals).

Co-parenting education for divorcing parents. Divorce affects 15,000 minor children annually in Wisconsin. Under current law, judges can require divorcing parents to take up to 4 hours of classes on effectively co-parenting after divorce. In one study, these classes may save the state money by reducing court costs. Given this potential, some states have made these courses mandatory. ■



The Science of Early Brain Development

Dr. Pat Levitt, one of the speakers at the 32nd Wisconsin Family Impact Seminar on *The Science of Early Brain Development*, is with the University of Southern California and the Children's Hospital of Los Angeles. In his lab, Dr. Levitt identified a gene that increases the risk for autism spectrum disorder. He has published his research in 190 scientific articles and 65 scholarly books, monographs, and reviews. This issue brief summarizes his seminar presentation.

ADDITIONAL INFO

Dr. Levitt's Family Impact Seminar presentation can be viewed at youtu.be/Br5t8PIEPzw. His chapter is available in the briefing report edited by Professor and Extension Specialist Karen Bogenschneider and Olivia Little at familyimpactseminars.org/s_wifis32report.pdf.

The Wisconsin Family Impact Seminars are 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.

Toxic Stress and Its Impact on Early Learning and Health

Building a Formula for Human Capital Development

Children's early experiences shape the architecture of the brain. Based on decades of research, when the brain is built on a strong foundation, it can improve school success, economic productivity, and responsible citizenship. When the foundation is weak, it increases the odds of later difficulties. Just like building a home, the brain is built in a predictable sequence—laying the foundation, framing the rooms, and wiring the electrical system. During the first few years of life, the wiring grows at an amazing rate. Every second, 700 new neural connections (synapses among brain cells) are formed.

The brain is most plastic early in life. Even during the first year of life, a baby's brain becomes specialized to the sounds it hears and begins losing the ability to respond to other languages. When the circuitry of the brain is not formed properly from the beginning, it takes more physiological energy to rewire it later. So influencing a baby's brain early in life is less expensive than the subsequent costs of remedial education, clinical treatment, public assistance, incarceration, and so forth.

Brain growth is highly interconnected. Children's thinking, emotions, and social skills do not operate in silos, but depend on each other to function properly. Together they are the "bricks and mortar" that form the foundation for human development.

Toxic stress can damage the architecture of the developing brain. Toxic stress refers to events that produce strong, frequent, or prolonged activation of the body's stress response system. Even among children as young as infants, toxic stress results in systems that turn on too quickly or shut down too slowly. In fact, toxic stress can "tune" a child's senses and thinking in ways that make it difficult to correctly interpret the world around them, function at a high level, and avoid problems later in life. Overtime, the

wear and tear of the body's response to toxic stress and the chemicals it releases can have consequences that last a lifetime—academic problems, social maladjustment, mental illness, and chronic physical disease.

Responsive and sensitive caregiving can serve as a powerful buffer against toxic stress. Healthy development can be threatened, not only by bad things that happen to children, but also by the absence of good things. Children's ability to cope with stress depends, in part, upon stable and caring relationships with parents and the adults who care for them. 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.

Neglect is more common and can be more damaging to a young child's development than physical abuse. Young children who are neglected may not have physical harm, but they may still have disruptions in the circuitry of their brain. Neglect interferes with the development of 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 related to abnormal activities in parts of the brain that deal with emotion and stress regulation, as well as attention and self-control.

Children who have been neglected have the capacity to recover. Evidence-based programs and policies that target both children and their parents/caregivers produce biological changes in children's response to stress that can have lifelong benefits. Most child welfare agencies have limited capacity to address child neglect. To prevent neglect, targeting family circumstances such as addiction to substances, financial hardship, medical challenges, parental depression, and social isolation can have a positive impact on child outcomes even though they do not specifically address children. ■