



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*.

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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 Rothermel Bascom Professor of Human Ecology Karen Bogenschneider and Olivia Little available at wisfamilyimpact.org/fis32/.

Programs and Policies to Foster Early Development

What Works: Part 1 of 2

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 (ABC), 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. ■