

From Neurons to Neighborhoods: The Science of Early Childhood Development

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This chapter explains the work of the Committee on Integrating the Science of Early Childhood Development that was established by the Board on Children, Youth, and Families of the National Research Council and the Institute of Medicine to evaluate and synthesize the interdisciplinary science of early childhood development and assess the influence of early experiences on children's lives. The committee was asked to separate fact from fiction and examine implications for policy, practice, professional development, and research. They found that early experiences make an important difference in children's lives; nurturing relationships are essential; society is changing and the needs of young children are not being met; and, interactions among early childhood science, policy, and practice are problematic and demand dramatic rethinking.

Putting the Study in Context

Society is changing. Needs of young children are not being met.

Two important changes over the past several decades have coincided to produce a dramatically altered landscape for early childhood policy, service delivery, and childrearing in the United States.

1. There has been an explosion of knowledge in neurobiology and the behavioral and social sciences.
2. There have been marked transformations in the social and economic circumstances under which families are raising young children.

Nevertheless, at a time when scientific advances could be used to strengthen early childhood policies and practices, knowledge is frequently dismissed or ignored and our children are paying the price.

Core Concepts of Development

Framing our understanding of human development are a number of core concepts:

1. Human development is shaped by a dynamic and continuous interaction between biology and experience.
2. Culture influences every aspect of human development and is reflected in childrearing beliefs and practices designed to promote healthy adaptation.
3. The growth of self-regulation is a cornerstone of early childhood development that cuts across all domains of behavior.
4. Children are active participants in their own development, reflecting the intrinsic human drive to explore and master one's environment.
5. Human relationships, and the effects of relationships on relationships, are the building blocks of healthy development.
6. The broad range of individual differences among young children often

makes it difficult to distinguish normal variations and maturational delays from transient disorders and persistent impairments.

7. The development of children unfolds along individual pathways whose trajectories are characterized by continuities and discontinuities, as well as by a series of significant transitions.
8. Human development is shaped by the ongoing interplay among sources of vulnerability and sources of resilience.
9. The timing of early experiences can matter but, more often than not, the developing child remains vulnerable to risks and open to protective influences throughout the early years of life and into adulthood.
10. The course of development can be altered in early childhood by effective interventions that change the balance between risk and protection, thereby shifting the odds in favor of more adaptive outcomes.

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CONCLUSIONS

All Children Are Born Wired For Feelings and Ready to Learn

Young children make dramatic and intertwined gains in cognitive, linguistic, emotional, social, regulatory, and moral development during the early childhood years, and each requires focused attention. Striking developmental disparities associated with social and economic disadvantages are apparent well before kindergarten and are predictive of later academic performance. Social, emotional, and regulatory impairments can seriously compromise early childhood development. Indeed, young children can suffer sadness, grief, and disorganization in response to trauma, loss, or personal rejection. Many early childhood programs do not have the capacity to address these concerns and the severe shortage of early childhood professionals with mental health expertise is an urgent problem.

Children's early development depends on the health and well-being of their parents, who along with other regular caregivers, are the active ingredients of environmental influence during early childhood.

Early Environments Matter and Nurturing Relationships Are Essential

The traditional *nature versus nurture* debate is simplistic and scientifically obsolete. Genetic and environmental influences are completely intertwined and work together in dynamic ways over the course of development. Children's early development depends on the health and well-being of their parents who, along with other regular caregivers, are the "active ingredients" of environmental influence during the early childhood period.

- Young children who lack at least one loving and consistent adult often suffer severe and long-lasting developmental difficulties.
- Significant parental mental health problems—particularly maternal depression, substance abuse, and family violence—impose heavy developmental burdens.
- The need for greater respect for child care providers is long overdue.

Poverty may be more damaging during the early childhood period than at later ages—especially in its subsequent impact on a child's school performance and ultimate academic achievement.

- Early brain development is designed to recruit and incorporate early experiences, but the window of influence does not slam shut at age 3 or 5.
- There is little evidence that special "enrichment" experiences promote "advanced" development in infancy, beyond the benefits of a supportive environment that provides a variety of opportunities for learning.
- Poor nutrition, specific infections, environmental neurotoxins, drug exposures and chronic stress can harm the developing brain.
- Early intervention programs can improve the odds for vulnerable young children, but those that work are rarely simple, inexpensive, or easy to implement.
- Culture influences every aspect of human development, and is reflected in a wide variety of child-rearing beliefs and practices

Society Is Changing and the Needs of Young Children Are Not Being Addressed

Significant social and economic transformations are posing serious challenges to the efforts of parents and others to strike a healthy balance between spending time with their children, securing their economic needs, and protecting them from the many risks that could have an adverse impact on their health and development.

Conclusions of this study:

- Parents are working harder, and for longer (and often nonstandard) hours.
- Economic needs often require return to work soon after a baby's birth.
- Access to good quality child care is beyond the reach of many working families.
- The burden of poor quality and limited choice of care rests most heavily on low-income working families above the poverty level.
- Young children are the poorest members of society and are more likely to be poor today than 25 years ago.
- Poverty may be more damaging during the early childhood period than at later ages—especially in its subsequent impact on a child's school performance and ultimate academic achievement.
- The double burden of family poverty and an impoverished neighborhood is a particularly significant threat, which affects minority children to a disproportionate extent.

Interactions Among Early Childhood Science, Policy, and Practice Demand Dramatic Rethinking

Knowledge about intervention effectiveness is constrained by the limited availability of rigorous evaluations of program implementation and infrequent assessments of financial costs and benefits. The politicized context of program evaluation research results in a high stakes environment that undermines honest attempts to identify shortcomings in order to improve quality.

There is an increasing need to reconcile traditional program formats and strategies—which emphasize active parent involvement and home-based services—with the economic and social realities of current family life and the growing cultural diversity of the population. Rapid advances in the science of early childhood present formidable challenges for professional continuing education.

RECOMMENDATIONS FOR POLICY AND PRACTICE

Commitment to Two Complementary Agendas

A Question for the Future

How can society use knowledge about early childhood development to maximize the nation's human capital and ensure the ongoing vitality of its democratic institutions?

A Question for the Present

How can the nation use knowledge to nurture, protect, and ensure the health and well-being of all young children as an important objective in its own right, regardless of whether measurable returns can be documented in the future?

Need for Greater Attention to Mental Health Needs

Early childhood programs must balance their focus on literacy and numeracy skills with comparable attention to the emotional, regulatory, and social development of all children, including those with special needs.

New investments must be made to address serious mental health needs in young children:

- Strong linkages must be built among welfare, protective services, early intervention, and mental health agencies.
- A comprehensive analysis of professional development challenges is needed, followed by significant investments in training.

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Need to Protect Early Brain Development

In order to protect children's early brain development, the nation should mount an attack on harmful prenatal and early postnatal neurotoxic exposures and violence in families on a magnitude comparable to other public health campaigns such as smoking cessation and teen pregnancy reduction.

All infants should have access to early screening and treatment of auditory, visual, or physical impairments that interfere with the brain's need for sensory and motor inputs

Need to Recognize the Significance of Nonparental Caregivers

We must develop a blueprint to ensure that public investments in child care

- promote sustained relationships between preschoolers and qualified caregivers.
- address the special needs of children with developmental disabilities or chronic health conditions.
- ensure that all early care and education settings are safe, stimulating, and compatible with the values and priorities of their families.
- make serious investments in training and compensation for child-care professionals

Need to Enhance Support for Working Families

In order to strengthen supports for working families:

- Congress and the President's Council on Economic Advisors should scrutinize the nation's tax, wage, and income-support policies to assure that no child supported by a working adult lives in poverty, and that no children suffer from deep and persistent poverty, regardless of their parents' employment status.
- The Family and Medical Leave Act should be expanded to cover all working parents, and strategies should be explored to provide income replacement.
- The exemption period should be lengthened before states require parents of infants to work as part of welfare reform.
- Early intervention programs must accommodate changing family circumstances and needs.

We must make serious investments in training and compensation for child-care professionals.

CONCLUDING THOUGHTS

Take-Home Messages

- Early experiences matter and healthy development depends on nurturing and stable relationships.
- How young children feel is as important as how they think, and how they are treated is as important as what they are taught, particularly with regard to school readiness.
- Early childhood interventions can shift the odds toward more favorable outcomes, but programs that work are rarely simple, inexpensive, or easy to implement.
- Society is changing and the needs of young children are not being met.

Early experiences matter; healthy development depends on nurturing and stable relationships.

Urgent Need for a New National Dialogue

In a highly pluralistic society that is experiencing dramatic economic and social change, the development of children must be viewed as a matter of intense concern for both their parents and for the nation as a whole. In this context, and based on the evidence gleaned from a rich and rapidly growing knowledge base, we feel an urgent need to call for a new national dialogue focused on rethinking the meaning of both shared responsibility for children and strategic investment in their future.

- Families are clearly the best vehicle for providing loving and caring relationships.
- Communities are ideally situated to provide support through informal networks and voluntary associations.
- Businesses can create work environments that both promote productivity and enhance family well-being by offering flexible work schedules and important benefit packages.
- Government at all levels can make a significant difference through tax policies that alleviate economic hardship, minimum wage laws that help low-income workers, child care standards that ensure safe and stimulating environments for young children, sufficient funding for early intervention services for all children with special needs, and paid family-leave benefits and child-care subsidies that give parents a real choice about whether and when to go back to work.

How young children feel, think and treated are as important as what they are taught.

Early Childhood interventions can shift the odds toward more favorable outcomes, but programs that work are rarely simple, inexpensive, or easy to implement.