

Brain Research

Who, What, When, Where, Why?

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Within the past twenty years, it has become more common for children's librarians to look at brain research to explain the importance of what they are doing, since "the exceptionally strong influence of early experiences on brain architecture makes the early years a period of both great opportunity and great vulnerability for development."¹

Responsive caregiving, like a volleyball game, involves reciprocal interactions (often referred to as "serve and return") that affect intellectual, social, emotional, physical, and behavioral development. This is especially important during the first three years of life when children depend on the adults in their lives for safety, survival, and socialization.² Science tells us that healthy children develop in an environment of loving reciprocal relationships with the important adults in their lives; because of this, library programming has expanded to include children under age three, and preschool programs now include adults as well as children.

Knowing about child development, the ways children learn, and the importance of parents in their lives affects the type of program that we plan and implement. Certain organizations, websites, and conferences are helpful for finding relevant information that can give us research findings and citations to support our work, spark programming ideas, and create developmental tips that explain to parents and caregivers the value of talking, reading, singing, and playing with their children.

The Institute for Learning & Brain Sciences (I-LABS) (<http://ilabs.washington.edu/>) at the University of Washington is an interdisciplinary brain research center that specializes in early learning and brain development. Their key areas of research are language, social and emotional development, cognition, and brain development. I-LABS provides free twenty-minute online training modules (<http://modules.ilabs.uw.edu/outreach-modules/>) to help parents and librarians understand different topics in the science of child development.

The Center on the Developing Child at Harvard University (<https://developingchild.harvard.edu/>) features many useful resources. The Resource Library (<https://developingchild.harvard.edu/resources/>) contains easily understandable information in the form of videos, other multimedia presentations, policy briefs, working papers, and reports. Their brief "Five Numbers to Remember about Early Childhood Development" (<https://developingchild.harvard.edu/resources/five-numbers-to-remember-about-early-childhood-development/>) includes these facts:

1. More than one million new neural connections are formed per second in the first few years of life.
2. At eighteen months old, disparities in children's vocabulary begin to appear.
3. Adversity breeds developmental delays; 90 to 100 percent of developmental delays occur when children experience six or more risk factors

such as poverty, caregiver mental illness, child maltreatment, single parent, and low maternal education. These can lead to delays in language, cognitive, or emotional development.

4. Adults who have had seven to eight adverse childhood experiences have 3:1 odds of developing adult heart disease.
5. There is a four-to-nine-dollar return for every dollar invested in high-quality early childhood programs. In addition to participants in early childhood programs benefiting from increased earnings in adulthood, public savings included lower expenditures for special education, welfare, and the costs of crime.

The May 2017 issue of *Young Children* (<http://www.naeyc.org/yc/pastissues/2017/may>), the Journal of the National Association for the Education of Young Children, is dedicated to the role of brain science in the development of young minds. Articles explain how brain science supports early childhood development, how caring relationships are at the heart of early brain development, how reducing parents’ stress can boost preschoolers’ self-regulation and attention, and how guided play and scaffolding can empower infants’ and toddlers’ learning, as well as providing us with a peek inside the brains of bilingual learners.

Learning & the Brain (www.learningandthebrain.com) provides professional development opportunities that connect educators with the latest research on the brain and learning and its implications for education in easily understandable language. Children’s librarians are informal educators; we can benefit by participating in professional Learning & the Brain conferences, one-day seminars, and summer institutes. These events frame the information so it can be geared toward practical use by educators working with children.

The Dana Alliance for Brain Initiatives (www.dana.org/About/DABI/) is a nonprofit organization committed to advancing public awareness about the progress and promise of brain research and to disseminating information on the brain in an

understandable and accessible fashion. They coordinate Brain Awareness Week, publish books, report on progress in brain research and allow you to sign up to have the latest neuroscience news delivered to your inbox. They also host the free online Girl Scouts Healthy Brain Initiative (www.dana.org/Publications/Scouts/) to help scout leaders create programs that encourage brain healthy lifestyles.

“Changing Brains” (<http://changingbrains.uoregon.edu/watch.html>) is a series of free videos that feature leading researchers describing keys to healthy brain development. The two-to-ten-minute videos focus on brain plasticity, imagining and development, vision, hearing, motor system, attention, language, reading, math, music, emotions, and learning.

PubMed (<http://pubmed.gov>) is the US National Library of Medicine’s premier search system for health information, and it can be accessed free online. It comprises more than twenty-seven million citations to biomedical literature and online books as well as many links to full-text content.

Butterfly Wings: Laughing and Learning with Littles (www.butterflywingsearlyyearsconsultancy.com.au/laughing--learning/) is maintained by two Australian Early Years consultants. Although the offerings are limited, this is a joyful and useful site. Clicking on the menu for “Rhymes” takes you to great brain-based developmental tips and creative programming ideas to accompany rhymes such as “You Are My Sunshine” and “The Veggie Macarena.”

References

1. Jack P. Shonkoff, “Breakthrough Impacts: What Science Tells Us about Supporting Early Childhood Development,” *Young Children* 72, no. 2 (2017): 9.
2. Alison Gopnik, *The Gardener and the Carpenter: What the New Science of Child Development Tells Us about the Relationship between Parents and Children* (New York: Farrar, 2016).

Index to Advertisers

ALSC 26, cover 3
 Annick Press.....35
 Boyds Mills Press cover 4
 Loyola Press3

Northern Kentucky University18
 University of Southern Mississippi..... cover 2
 Wayne State University Press37