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The Brain/Education Barrier

IN AN ERA OF TRANSLATIONAL SCIENCE, RESEARCHERS OFTEN FIND THEMSELVES IN THE mixed company of policy makers, legislators, and educators looking for “evidence-based” practice. That’s how it was earlier this year in March, when a distinguished international group of neuroscientists and cognitive psychologists convened at the University of Chile in Santiago for the conference titled Early Education and Human Brain Development, which many Chilean ministers, educators, and scientists attended to learn how brain science might transform education. On day one, however, it became clear that myths about brain-based pedagogy dominated participants’ thinking. The Chilean educators were looking to brain science for insights about which type of preschool would be the most effective, whether children are safe in child care, and how best to teach reading. The brain research presented at the conference that day was mute on these issues. However, cognitive and behavioral science could help.

How could an international group of scientists communicate that there is superb developmental evidence that speaks directly to educational concerns, whereas brain science cannot yet do so? How might brain science become an aspect, rather than the driving force, of ongoing educational discussions? To address these questions, we and scientists from Chile, France, Germany, Holland, Spain, the United Kingdom, and the United States drafted the Santiago Declaration, a statement reflecting what science can tell us about early education. It summarizes knowledge about child development and early learning, the benefits of embedding learning in meaningful social contexts, the importance of active rather than passive learning, the need for sensitive and responsive environments, and the need for concern about how, not just what, children learn. We hope that this declaration (www.jsmf.org/declaration) will become a focal point for the discussion of evidence-based educational practice.

How did the myth of brain-based pedagogy become so pervasive in educational discussions? How did policy makers, educators, and the public become so misinformed? Current worldwide interest in early childhood development can be attributed to a successful public relations campaign launched in the mid-1990s in the United States. The campaign promoted legislation to fund Early Head Start. Media interest made the campaign’s message headline news for parents around the world. Yet brain science, which is still refining methods to analyze early brain development, is not ready to relate neuronal processes to classroom outcomes.

Current brain research offers a promissory note for a future in which developmental models and theories of learning may be refined based on how brain systems support learning. Meanwhile, popular misunderstandings present a serious downside. One example is the emphasis given to the popular, but scientifically unsupported, notion of a critical period during which children’s brains can learn almost any subject efficiently. Belief in a biologically limited critical period for learning mobilized governments, legislators, and media worldwide to pass legislation and fund early childhood programs. The educational literature is now stocked with books and articles boasting brain-based curricula and practices. Brain-based consultants continue to visit school districts. And a market has grown for brain-based toys. The message of synaptic growth and critical periods has affective appeal, but no scientific substance. Unfortunately, this enthusiasm has caused us to neglect research that tells us how children learn.

The Santiago conference suggested how scientists might better function in mixed translational company. We must keep in mind that motivated educators and policy makers are the end users of scientific research. Scientists should listen to the practical questions generated by these consumers. Real dialogue starts when we address misconceptions and misunderstandings across the research/practice divide. Over time, these conversations can lead to a common vocabulary, informed engagement, meaningful applied research, and ideally, evidence-based practice. The conversation might even contribute to more informed policy discussions. We applaud the attention directed to the world’s youngest citizens, and urge that policies, standards, curricula, and, to the extent possible, commercial ventures, be sensitive to evidence-based practice based on the best scientific research.

– Kathryn Hirsh-Pasek and John T. Bruer

