

## Beyond Bootstraps: Pulling Children Up With Evidence-Based Interventions

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*Never hug and kiss them. Never let them sit in your lap. If you must, kiss them once on the forehead when they say goodnight.*  
—John B. Watson, *Psychological Care of Infant and Child* (1928)

We take it as a given that children need early social engagement—time with parents, teachers, and other kids—to develop into healthy and resilient adults. But it was not always this way. In fact, for much of the 20th century, the prevailing view in psychology was that early connection with caregivers was not important. A surprising number of psychologists believed that providing comfort to young children would turn them into weak, incapable adults who would be burdens on their communities—an “anticoddling” approach.

But not everyone subscribed to the conventions of the mid-20th century. One young psychologist, Edward Zigler, believed that positive early relationships were a critical aspect of healthy development. Moreover, he thought that strong social support would lead to tangible benefits across a range of outcomes, especially for disadvantaged children. Based on these ideas, Zigler designed and launched the Head Start program in 1965. Head Start would become the first comprehensive federal childcare program to provide education, health, and parent-involvement services to low-income children and their families. Zigler hoped to construct a “school for the 21st century,” in which childcare, health, and social services would be part of the public school system. All children would have access to social support during critical periods of development.

Zigler was sharply criticized for his ideas. His major detractors claimed that such programs were part of a communist plot to keep women in the workplace while children were raised by the state. And so the initiative was a grand experiment—an opportunity to gather data on two key questions. Foremost, would early interventions improve outcomes for underserved children? Secondly, if early interventions improved outcomes, what could be understood about the brain mechanisms that were driving the improvements?

The answer to the first of these questions—do early interventions improve outcomes?—proved to be clear-cut. A range of programs implemented from the 1960s through today support Zigler’s initial hypothesis that early interventions work. One of the best examples is the Promoting Alternative Thinking Strategies curriculum. Developed in the 1990s, the Promoting Alternative Thinking Strategies curriculum is designed to improve emotional communication and regulation, cooperation, and problem solving in toddlers and school-aged children (1). A meta-analysis involving more than 270,000 children reported that children in the program showed enhanced social skills and scored an average of 11 percentile points higher on

standardized tests than control group counterparts (2). This could mean the difference between earning a B– and an A in class and, in an era of fierce competition for college placement, can make an important difference in whether students get a spot at their first-choice colleges. Children exposed to emotional communication curricula do better on many dimensions of what we think of as “well-being”—better emotion regulation, better academic performance, less drug use, and fewer conduct problems (3). All of which is to say: the effects of these interventions are broad and powerful.

Knowing that these programs are effective is critical for informing social policy debates. Moreover, it sets the stage for a deeper exploration of the underlying science. That is, how do they work?

One of the ways we can determine how things can go right is by understanding how they go wrong: what happens to children’s brains when they are deprived of an enriched early environment? One of the most dramatic examples of this emerged in an unintended and ultimately tragic way in Romania from the late 1960s through the early 1990s. Under the dictatorship of Nicolae Ceaușescu, the government sought to increase Romania’s population. Accordingly, contraception and abortion were outlawed and families with fewer than five children were taxed. This left the country struggling with both extreme poverty and an increasing population; there were too many babies and families could not afford to care for them. As a result, by the time of Ceaușescu’s execution in 1989, 170,000 children were living in orphanages. Once institutionalized, these children would spend years—quite literally years—at a time, languishing in cribs indoors. They were cut off from care, conversation, and loving touch, all while experiencing the chronic stress of the orphanage environment.

From this tragedy emerged a seminal research study: the Bucharest Early Intervention Project. For more than a decade, researchers studied the development of these orphans, comparing stress responses in institutionalized children to those who had been placed in foster homes and those who had grown up with their parents. The researchers tested stress reactivity in the three groups of children in a laboratory task that simulates social stress (the Trier Social Stress Test). The institutionalized children showed blunted hypothalamic-pituitary-adrenal and sympathetic nervous system responses to stress compared with children who were raised by their parents and children who were raised in foster care (4). These data demonstrated that social support is crucial for children to develop the ability to effectively regulate their response to stress.

The findings were not only about stress responses. Children raised without appropriate social support also suffered from cognitive delays. As part of the same study, researchers

measured intellectual performance and used electroencephalography to record brain waves in the children raised in institutions to compare them with those raised in community homes. The institutionalized group showed reduced brain activity in the alpha range (8–13 Hz; the frequency range involved in attention) compared with their counterparts. The pattern of neural activity detected in the children who had grown up in institutionalized settings resembled that of much younger children, suggesting developmental delay (5).

While these findings were striking, they are (gratefully) not replicable—it is simply not possible to rigorously study these types of questions in humans. However, neuroscientist Michael Meaney has used rodent models to investigate similar questions in a controlled laboratory setting (6). Meaney showed that rat pups raised by mothers who attended less to their babies' needs developed fewer hippocampal glucocorticoid receptors, demonstrated dysregulated stress responses, and showed a reduced ability to learn new information later in life (6). Studies like these have offered specific hypotheses for the types of deficits that might emerge from adverse early experiences and have inspired a range of human studies. For example, resting-state functional magnetic resonance imaging studies have shown that children who have experienced more childhood adversity exhibit decreased medial prefrontal cortical–amygdala connectivity, which has been correlated with more frequent behavior and attention problems (7,8).

Early adverse experiences leave a clear neurobiological footprint—so how do successful interventions impact the brain? Over the past 20 years, the new field of social-affective neuroscience has been trying to unlock some of these puzzles. One recent study used the Trier Social Stress Test to induce stress in 61 girls between 7 and 12 years of age. Seltzer *et al.* (9) showed that the children who were allowed a brief interaction with their mothers after the stressful procedure had more tempered endocrine responses and higher plasma levels of the social bonding hormone oxytocin, which may act to regulate hypothalamic–pituitary–adrenal activation. This is consistent with Meaney's work (6) showing that baby rats reared by “supportive” mothers, who licked and groomed them regularly, developed robust hippocampal glucocorticoid receptors and well-regulated stress circuitry. Beyond the stress-buffering effects of social support in the acute setting, young people with stronger social connections also report higher self-esteem, lower rates of depression, better immune function and physical health, and engagement in fewer high-risk behaviors (10).

The established dogma in the 1960s was that everyone should be able to pull themselves up by their bootstraps regardless of their upbringing. Looking back, it is hard not to view this attitude as reflecting the role that researchers' own *privilege* has played in the history of science—only individuals with such advantages could be so oblivious to the toxic consequences of adversity. Tragically, this same deeply misguided belief system continues to influence broad social policy.

Regardless of belief systems, the data are now clear: children need social support to experience healthy development. For children born into less fortunate circumstances, early interventions can be life-saving. They improve cognitive

development, social skills, and general health and reduce crime down the road. These initiatives not only are effective but also may be cost-effective. It's time to move beyond the question of “coddling”—or the modern epithet of “snowflake”—and to use these data to build evidence-based curricula to help children grow into strong, resilient adults.

### Acknowledgments and Disclosures

Clinical Commentaries are produced in collaboration with the National Neuroscience Curriculum Initiative (NNCI). David A. Ross, in his dual roles as co-chair of the NNCI and as Education Editor of *Biological Psychiatry*, manages the development of these commentaries but plays no role in the decision to publish each commentary. The NNCI is supported by National Institutes of Health Grant Nos. R25 MH08646607S1 and R44 MH115546-01.

The authors report no biomedical financial interests or potential conflicts of interest.

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Received Jun 3, 2019; accepted Jun 6, 2019.

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