

The two-year window; Neuroscience has shown that emotional damage done to infants lasts a lifetime. But there's no money to find solutions

National Post

Tue Jan 3 2012

Page: A13

Section: Issues & Ideas

Byline: Jonathan Cohn

Source: The New Republic

A decade ago, a neuroscientist named Charles Nelson travelled to Bucharest to visit Romania's infamous orphanages. What stayed with him ever since was the eerie quiet of the infant wards. "It would be dead silent, all of [the babies laying] on their backs and staring at the ceiling," says Nelson, who is now at Harvard. "Why cry when nobody is going to pay attention to you?"

Nelson had traveled to Romania to take part in a cutting edge experiment. It was 10 years after the fall of the communist dictator Nicolae Ceausescu, whose scheme for increasing the country's population through bans on birth control and abortion had filled staterun institutions with children their parents couldn't support. With backing from the MacArthur Foundation, and help from a sympathetic Romanian official, Nelson and colleagues from Harvard, Tulane and the University of Maryland prevailed upon the government to allow them to remove some of the children from the orphanages and place them with foster families. Then, the researchers would observe how they fared over time in comparison with the children still in the orphanages. They would also track a third set of children, who were with their original parents, as a control group.

Prior to the project, investigators had observed that the orphans had a high frequency of serious developmental problems, from diminished IQs to extreme difficulty forming emotional attachments. Tests revealed that some of the orphans had reduced activity in their brains. The Bucharest project confirmed these findings, and also uncovered a striking pattern: Orphans who went to foster homes before their second birthdays often recovered some of their abilities. Those who went to foster homes after that point rarely did.

This past May, a team led by Stacy Drury of Tulane reported a similar finding - with an intriguing twist. The researchers found that telomeres, which are protective caps that sit on the ends of chromosomes, were shorter in children who had spent more time in the Romanian orphanages. In theory, damage to the telomeres could change the timing of how some cells develop, including those in the brain - making the shorter telomeres a harbinger of future mental difficulties. It was the clearest signal yet that neglect of very young children does not merely stunt their emotional development. It changes the architecture of their brains.

This is a revelation with profound implication - and not just for the Romanian orphans. Approximately seven million American infants, toddlers and preschoolers get care from somebody other than a relative, whether through organized daycare centres or more informal arrangements. And much of that care is not very good.

There are also hundreds of thousands of babies born each year to American teenagers, about 60% of them poor. The vast majority of teen mothers are unmarried, and lack family support or financial resources. Then there are the children who begin their lives in traumatic circumstances for other reasons - because they have a parent with clinical depression, or they witness violence in the home. These children are believed to be disproportionately (though certainly not exclusively) from low-income homes.

For a long time, social science has known of correlations between childhood turmoil and all sorts of adult maladies that carry massive social and financial costs - mental illness, addiction, tendencies toward violence. And for decades, we have attempted to address those problems with a variety of social interventions. While some have achieved important successes, many of the problems stemming from childhood poverty remain intractable. But a scientific revolution that has taken place in the past decade or so illuminates a different way to address the dysfunctions associated with childhood hardship. Researchers, including those of the Bucharest project, have shown how adversity during this period affects the brain, down to the level of DNA - establishing for the first time a causal connection between trouble in very early childhood and later in life. And they have also shown a way to prevent some of these problems - if action is taken during those crucial first two years.

A baby's genes contain a blueprint for what cells to build and when, and how those cells are capable of operating, over the course of a lifetime. But experience and environment have profound effects on how the body reads and applies that blueprint. Hormones affect this process, especially stress hormones. With these hormones sloshing around, blood pressure rises, muscles tighten and energy surges. When the baby is quickly comforted, the body produces fewer stress hormones and the brain goes back to business as usual. And if this happens repeatedly, as it should, the nerve impulses crackling in the brain will carry the signals for effective coping with stress over and over again - building pathways that the baby can use later in life to solve problems and overcome difficulty.

But the baby who is ignored or neglected just keeps screaming and flailing. Eventually, he exhausts himself and may appear to withdraw. Yet the quiet child is not a content child. Constant activation of the stress system causes wear and tear on the brain, altering the formation of neural pathways, so that coping and thinking mechanisms don't develop in the same way.

Early adversity can interfere with "planning ability, cognitive flexibility, problems with memory, and all of those will correlate with diminished IQ." Every one of the researchers emphasizes that some children who go through these experiences end up OK - and that later interventions may still be helpful for those children who struggle. But, overall, says Nelson, "they're more likely to have mental health problems. The top of the list will be anxiety. Second to that will be attention deficit disorder. And then depression." One 2010 paper from Psychological Medicine concluded that "childhood adversities" - a category that includes abusive parenting and economic hardship - were associated with about one in five cases of "severely impairing" mental disorders and about one in four anxiety disorders in adulthood. These problems incur large costs: Literally hundreds of billions in lost wages or costs of incarceration.

The first time I heard of this field of research was during a conversation with a woman named Diana Rauner. For her dissertation, she visited daycare centres in Chicago, hoping to learn about how infants and toddlers pick up language skills. But she learned a lot more about the sorry state of child care. Rauner described facilities where infants were strapped in car seats,

"watching *The Lion King* all day," while the older kids were "circling the room almost like sharks" and throwing things at the infants, because they had nothing else to do. But the infants frequently didn't cry. "A lot would just stare, which is almost worse," Rauner says. Today, Rauner runs a nonprofit organization called the Ounce of Prevention Fund, a \$40-million-per-year initiative that applies the latest scientific findings about early childhood - in particular, those first few years - to help some of Chicago's most disadvantaged families. The fund trains workers at daycare centres on how to nurture babies in ways that will stimulate positive brain activity. It also operates its own child-care centre and school, called Educare, that became the model for a national network of such facilities designed to improve daycare for infants and young children, including those too young for Head Start. But perhaps the program's most intriguing initiative is its work with agencies that provide at-home visits to young women, particularly teenagers, who are either pregnant or are new mothers.

Some of these agencies employ doulas, who are specially trained to provide advice and support to mothers, from the prenatal period all the way up through early childhood. A few weeks ago, I went on a visit with Maria Caref, a doula who works for Christopher House, an organization that partners with Ounce of Prevention. Maria was visiting "Rosaria," a 17-year-old high school student with a four-month-old baby boy. (I have agreed not to identify the real name of Rosaria or her baby.)

Rosaria lives on the second floor of a house in a lower-income, predominantly Latino neighbourhood on the west side. When we walked in, her son was lying face-up on a Winnie-the-Pooh fleece blanket on the floor, playing with a ball. Rosaria was on the floor next to him. Children's music was playing loudly in the background. Like most of the young mothers Caref visits, Rosaria came to Christopher House via a referral (in this case, from a health clinic) while she was pregnant. The official agenda for the visit was to assess whether she was still working toward her own goals as a student and as a parent. But, as always, it was also a chance to check up on the baby and how Rosaria was caring for him.

Rosaria told Caref she was pleased that her boy was aware of her voice and would turn his head to follow her. Rosaria pointed out a plaything she'd made the baby, by sewing buttons onto socks that she'd turned into mittens. Caref smiled, but warned of the buttons: "You have to be careful. He can pull this hard and he can swallow this." Later the two talked about whether Rosaria had followed up with immunizations (she had) and whether she was still reading to the boy regularly (she was, although she was busy with her own homework, too). "For some mothers, it's really hard to keep up," Caref told Rosaria as we left. "You've been doing really well."

A major goal of these visits is to establish long-term relationships, so that the young women come to see the visitors as both a source of support and an advocate for their interests. Visitors like Caref are trained to deal with a wide range of issues, from basic psychology to health. During the visit, Caref talked to Rosaria about breastfeeding, which has significant health benefits for both mother and child. They also spoke about birth control. Studies have shown that teen mothers who have more than one child, particularly in rapid succession, are by far the most likely to fall into crisis.

The model for these efforts is a visiting nurse program that David Olds, a University of Colorado pediatrician, tested in Elmira, N.Y., during the 1970s and '80s, and which grew into the national Nurse-Family Partnership. In 2011, the program, which the U.S. government helps finance, will serve more than 20,000 families; they receive home nurse visits from when they become pregnant until their children are two years old. Olds's program is one of

the more unambiguous success stories in the modern history of social policy. Two long-term studies published in the Journal of the American Medical Association found that adolescents whose mothers had been in the program were less likely to run away, get arrested or consume alcohol or tobacco. Reports of child abuse were lower by about 50%.

When the RAND Corporation evaluated the initiative, it determined that the program would save between \$1.26 and \$5.70 for every \$1 spent, with the higher savings from the higher-risk families, thanks to reduced spending on hospitals, incarceration and cash assistance. And according to Timothy Bartik, an economist and author of *Investing in Kids*, every dollar that goes into the Nurse-Family Partnership will raise incomes for the entire population by \$1.85, once you factor the economic benefits of a more productive workforce - and a tax base that won't be so strained picking up the tab for remediation and crime. High-functioning daycare centres that cover birth through age five, Bartik says, produce a larger payoff per dollar: \$2.25.

The science of early adversity, then, offers a blueprint for tackling the effects of poverty and neglect, one that is more precise and observable than any tools policymakers have ever had at their disposal. "The concept of disrupting brain circuitry is much more compelling than the concept that poverty is bad for your health," says Jack Shonkoff, a Harvard pediatrician and chair of the National Scientific Council on the Developing Child. "It gives us a basis for developing new ideas, for going into policy areas, given what we know, and saying here are some new strategies worth trying."

After my visit with Caref, it was possible to imagine what a comprehensive policy response to the problems of impoverished early childhood might look like. Young families would have the option of home visits, from doulas or social workers. Child care would be higher quality across the board. It would also be affordable, even for families at or below the poverty line. Such services wouldn't be available exclusively to the poor, since middleclass families could also benefit from many of these programs. That would make them more popular, too.

From a policy standpoint, probably the biggest question about home visiting is how well it would work on a much larger scale. Not all home programs are going to be as thorough as the effort I saw in Chicago, which means they may not produce the same benefits.

But the bigger questions right now are political. Nobody in America is talking about launching a new government initiative, no matter how much money it might save in the long run. On the contrary, the focus today is on slashing government spending.

Hard times require hard choices, of course. But these cuts can be counterproductive. One of the most convincing advocates for this argument is James Heckman, a Nobel Prizewinning economist from the University of Chicago. Heckman argues that a dollar spent on the earliest years of life generates more payoff than a dollar spent on later childhood - let alone a dollar spent on adulthood. Neither he nor any of the scientific researchers believes the United States should stop funding later interventions as long as the programs actually have some impact. Among other things, plenty of infants with nurturing caregivers still develop problems later on, for other reasons. But Heckman agrees with researchers who argue that the older the child, the more expensive and difficult those interventions will be.

Heckman has tried to make this case to anybody who will listen, including members of the congressional super committee on deficit reduction, whose cuts to social services - either directly or through reduced aid to the states - could decimate existing services while leaving

little room for new initiatives. "We can gain money by investing early to close disparities and prevent achievement gaps, or we can continue to drive up deficit spending by paying to remediate disparities when they are harder and more expensive to close," Heckman wrote in a formal letter to the committee in September. "The argument is very clear from an economic standpoint."

- Jonathan Cohn is a senior editor at The New Republic. A longer version of this article appeared in the Dec. 1 issue of the magazine.