

USING SCIENTIFIC EVIDENCE TO IMPROVE OUTCOMES THROUGH EARLY CHILDHOOD INVESTMENTS

Evidence supported through neuroscience research found that early preventive intervention with children is more effective and produces more favorable outcomes than remediation later in life. Research scientists have developed a framework using evidence to improve outcomes in learning, behavior and health for impoverished children. The evidence substantiated the premise that the nation's future prosperity and security begins with the well-being of the nation's children.

According to Jack P. Shonkoff, M.D., Director of the Center on the Developing Child at Harvard University, "The early childhood years formulate the foundation for later economic productivity, responsible citizenship, and a lifetime of sound physical and mental health. The healthy development of all young children benefits all of society by providing a solid foundation for economic productivity, responsible citizenship, strong communities and a secure nation."

The Robert Wood Johnson Foundation Commission to Build a Healthier America reported that to invest in improving child care and development at the beginning of life could be the most effective strategy for realizing the healthy development of all Americans.

The *Tennessee Second Look Commission Annual Report*, (an analysis of the Tennessee Department of Human Services child abuse cases, released in December 2011), reported the future prosperity of any society depends on its ability to foster the health and well-being of the next generation. It went on to report that when a society invests wisely in children and families, the next generation will pay that back through a lifetime of productivity and responsible citizenship.

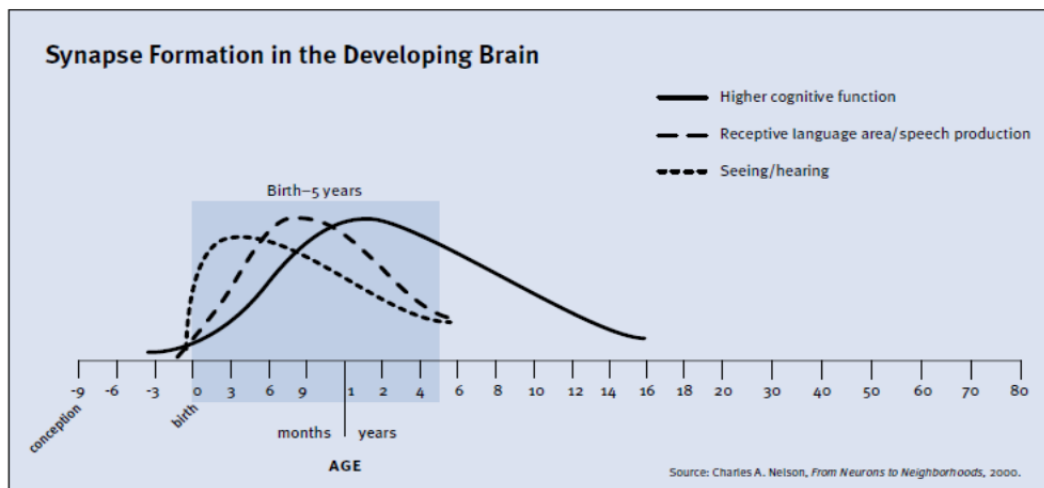
Healthy child development is the foundation of economic prosperity, strong communities, and an equitable society, according to the mission of The Center on the Developing Child at Harvard University, a cross-disciplinary academic center founded in 2006. The advancement of the center's vision occurred using science to validate and enhance child well-being that had been utilized to develop the center's innovations for policy and practice. The center's research findings supported that the vitality and sustainability of society depends on the extent to which it expands opportunities early in life for all children, for achievement of their full potential and engagement in responsible and productive citizenship.

The Center on the Developing Child at Harvard University released the report “A Science-Based Framework for Early Childhood Policy,” based on in-depth research that represented the analysis of four decades of high quality evaluation research of programs for children ages birth to age five. The research findings provided evidence for a credible comprehensive guide for evidenced based policymaking for early childhood interventions.

Public and private policy makers have been challenged with multiple recommendations and proposals for improvement of child wellbeing and decision making through Early Childhood interventions, government support and other investments. The center’s research report was intended to assist both public and private sectors in making investments that contribute to more effective decision-making in the nation’s future by supporting healthy development of young children and their families.

Investing in the early childhood development would yield high economic, social, and physiological returns as well as future retention of a skilled workforce. Leveraging the power, accountability, and sustainability of bipartisanship and public- private sector partnerships are essential for the reduction of early childhood inequalities and increased economic investment. Low cost services that are fragmented have been proven to be ineffective. Programs that have been well implemented and continuously improved on have been proven to be more effective and responsible investments.

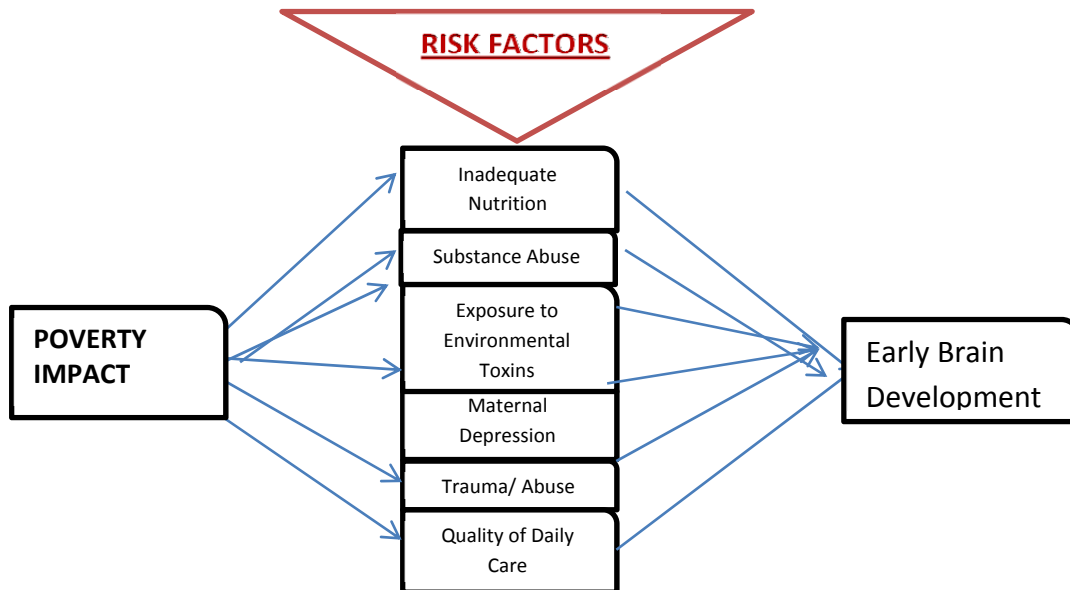
In early childhood development scientific evidence demonstrated that critical aspects of the brain architecture are shaped by experiences before and soon after birth. Many fundamental aspects of the brain’s architecture are established before age 5. The following diagram shows the critical aspects of the child’s brain development that are shaped by experiences before birth and age five, with the fundamental aspects of the brain’s architecture being well established before a child enters school.



Source: www.developingchild.net and Charles A. Nelson, *Neurons to Neighborhoods*, 2000

While all children are potentially vulnerable to a number of risk factors that could impede brain development before age 5, a disproportionate number of children in poverty are more often exposed to risk factors as shown in Diagram 1. The risk factors as shown in Diagram 1 can influence the brain in a detrimental way.

Diagram 1: THE IMPACT OF POVERTY ON CHILDREN'S BRAIN DEVELOPMENT



Source: National Center for Children in Poverty, "Poverty and Brain Development in Early Childhood", June 1999. http://www.nccp.org/publications/pdf/text_398.pdf

Socioeconomic disadvantages in early childhood can lead to physical changes in brain development, limiting children's chances to succeed and be healthy. High-quality early child care can markedly improve the mental and behavioral development of children. Child poverty was linked to lower educational attainment and lower income in adulthood, with acute health effects. Social and economic conditions – factors associated with income, education, and neighborhood poverty also affect health at every stage of life.

<http://www.commissiononhealth.org/LifeExperience.aspx>

The National Center for Children in Poverty reported on the link between poverty and brain development in early childhood. They described how there is a sensitive period when the brain is most likely to respond to and grow from exposure to environmental stimulation. That sensitive period or window of optimal brain development is from the prenatal period to the first 5 years of a child's life. Given the importance of the first years of life to the development of the brain and to the ability of children to reach their full potential, it is critical that children's exposure to critical risk factors during early childhood is reduced. To apply the science of early childhood and brain development to a broad range of policies that include child protective services, adult mental health, environmental protection, and welfare reform, among others, is related to better outcomes for children.

Dr. Bruce Perry, acclaimed child psychiatrist and lecturer on child trauma, reported that in a state of calm, all humans use the higher more complex parts of the brain to process and act on information and in a state of fear. As the lower parts of the brain are used and any perceived threat level goes up, the human responses become less thoughtful and the more reactive. Dr. Perry also noted that when children experience repetitive activation of stress response, their baseline state of arousal is altered. That would mean that the traumatized child would live in an aroused state, ill-prepared to learn from social, emotional, and other life experiences. Dr. Perry explained that a traumatized child and the consequences of their actions may not be appreciated or could be misunderstood. <http://childtrauma.org/>

The UCLA Center for Healthier Children, Families, and Communities reported four general findings that could have significant implications for parenting and public-policy efforts that support optimal brain development during early childhood:

1. A child's brain is not mature at birth
2. Experiences of life change a child's brain
3. Timing of experiences can influence a child's development
4. A child's relationship with adults influences the child's social and emotional functioning

<http://www.healthychild.ucla.edu/Publications/Documents/halfon.health.dev.pdf>

Core Concepts of Development

Researchers have found that there are core concepts of the child's developing brain and the child's relationship with adults that scientifically affect early life experiences, health, behavior, and overall learning. Early experiences determine whether a child's brain architecture will provide a strong or weak foundation for all future learning, behavior, and health.

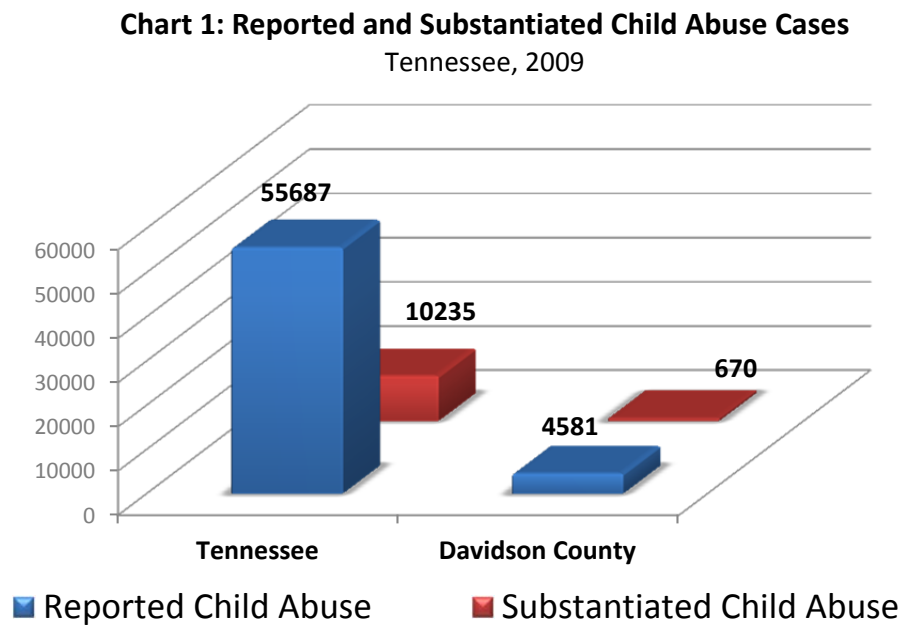
Public policies that support the ability of parents, providers, and other community members to interact with children in stable and stimulating environments help to create a foundation for later school achievement, economic productivity, and responsible citizenship. The interaction of the genes and experience shapes the architecture of the child's developing brain and the child's relationships with the adults in their lives. Young children need positive relationships, effective learning opportunities, and safe environments.

Positive and tolerable stress is a normal part of child development. If the stress response is extreme and long-lasting, and positive adult relationships are unavailable to the child, the result can be damaged, weakened systems of the brain's architecture, with lifelong repercussions. Abnormal stress can damage developing architecture and inhibit the body's response system that can lead to lifelong problems in learning, behavior, and both physical and mental health. Excessive stress or "toxic stress" can produce physiological disruptions or biological memories that undermine the development of the body's stress response systems and affect the developing brain, cardiovascular system, and immune system.

The Tennessee Second Look Commission reported that early experiences literally shape how the brain is formed. A strong foundation in the early years increases the probability of positive outcomes and a weak foundation increases the odds of later difficulties.

The Tennessee Second Look Commission (SLC) was created by the Public Chapter 1060 of the Acts of 2010 to review cases involving a second or subsequent incident of severe child abuse and to provide recommendations with findings to the General Assembly for adequate protection of the children in Tennessee. The Commission reported in their 2011 *Annual Report* that the issues of child abuse could not be adequately addressed by stakeholders that included Tennessee Department of Children’s Services, Tennessee Commission on Children and Youth, Tennessee Chapter of Child Advocacy Centers, law enforcement, courts, community agencies or others. According to the report, stakeholders are not effectively communicating and sharing essential child abuse related data. They recommended that strategies to improve communications in a coordinated and concerted manner with sharing of essential child abuse related data could include, but would not limited to co-location centers for child abuse stakeholders to collaborate, coordinate, and communicate child abuse referral information. It recommended a possible “Fusion Center” for child abuse cases similar in concept to the Tennessee Bureau (TBI) Fusion Center for terrorism and other crimes.

The Tennessee Department of Children’s Services, Child Protective Services reported that in 2009 there were 55,687 reports of child abuse in the state, and of that total, 4,581 were reported in Davidson County. Child Abuse cases for which sufficient evidence was available and could be determined (substantiated cases) were reported as 10,235 in Tennessee and 670 were in Davidson County. Those reported and substantiated cases of child abuse are shown in Chart 1.

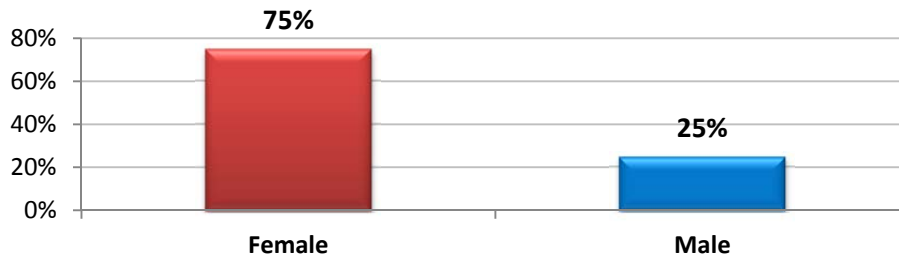


Source: Tennessee Department of Children's Services 2009; KIDS Count

The following three charts will show the demographics of children who experienced second or subsequent incidents of severe abuse, as reported by the Department of Children's Service for the fiscal year 2009-2010. The gender and racial composition of the victims is shown in Charts 2 and 3.

Chart 2: Severely Abused Children By Gender

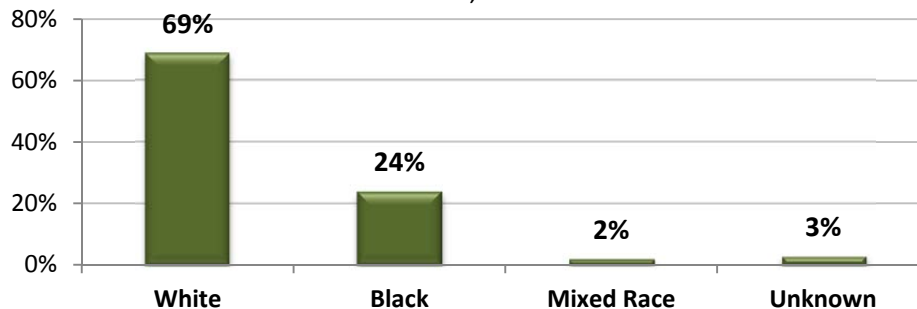
Tennessee, 2009-2010



Source: Tennessee Department of Children's Services, <http://www.tn.gov/tccy/slc-areport11.pdf>

Chart 3: By Racial Composition Severely Abused Children

Tennessee, 2009-2010

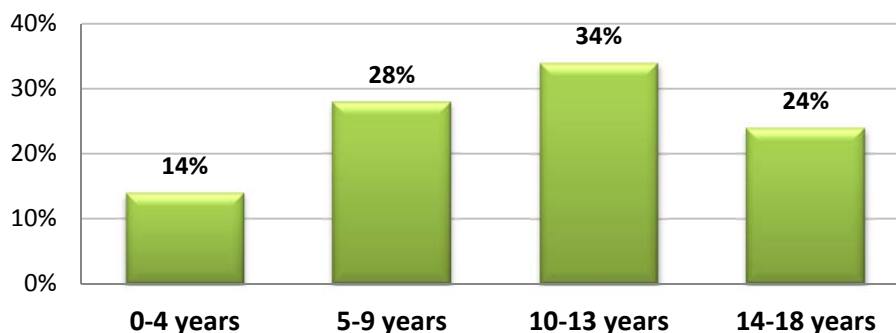


Source: Tennessee Department of Children's Services, <http://www.tn.gov/tccy/slc-areport11.pdf>

Chart 4 shows the most frequently severely abused age group was the ages between 10-13 years old.

Chart 4: Child Victims Severely Abused by Age

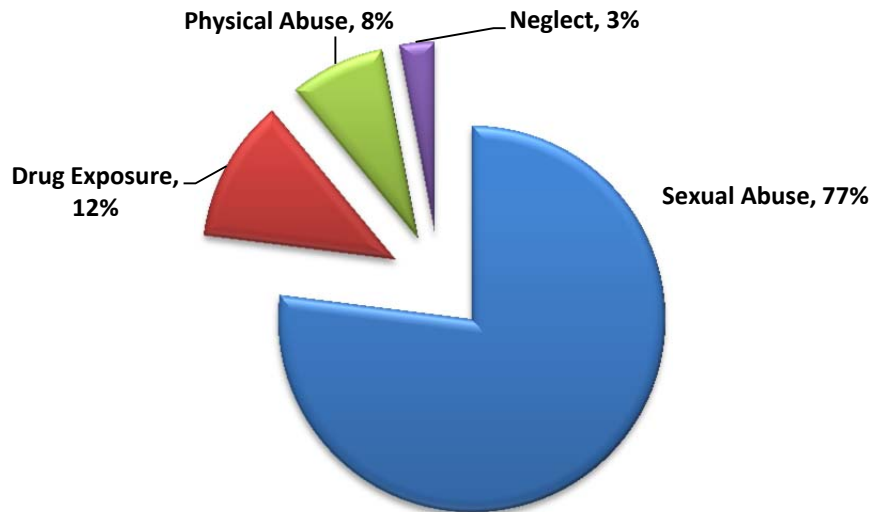
Tennessee, 2009-2010



Source: Tennessee Department of Children's Services, <http://www.tn.gov/tccy/slc-areport11.pdf>

Sexual abuse comprised 77% of the incidents of abuse in the cases of children who experienced second or subsequent incidents of severe abuse, as shown in Chart 5.

Chart 5: Types of Severe Abuse of Children
Tennessee, 2009-2010



Source: Tennessee Department of Children’s Services, <http://www.tn.gov/tccy/slc-areport11.pdf>

When the stress response systems of young children are activated in an environment with supportive adult relationships, the impact to the child is diminished, resulting in the development of healthy stress response systems. Extensive research on the biology of stress has shown that healthy development can be derailed by excessive or prolonged activation of stress response systems in the body (including the brain), with damaging effects on learning, behavior, and health throughout the child’s life.

There are three major categories of stress and the severity of children’s responses to stressful conditions:

1. Positive stress response is a normal and essential part of healthy development, characterized by brief increases in heart rate and mild elevations in hormone levels. The first day with a new caregiver or receiving an injected immunization could trigger a positive stress response.
2. Tolerable stress response activates the body’s alert systems to a greater degree because of more severe, longer-lasting difficulties, such as the loss of a loved one, a natural disaster, or a frightening injury. If the activation is time-limited and supported by relationships with adults who help the child adapt, the brain and other organs recover from what might otherwise be damaging effects.
3. Toxic stress response can occur when a child experiences strong, frequent, and/or prolonged adversity such as physical or emotional abuse, chronic neglect, caregiver substance abuse or mental illness, exposure to violence, and/or the accumulated burdens

of family economic hardship—without adequate adult support. This kind of prolonged activation of the stress response systems can disrupt the development of brain architecture and other organ systems, and increase the risk for stress-related disease and cognitive impairment, well into the adult years.

The more adverse experiences in childhood, the greater the likelihood of developmental delays and later health problems, including heart disease, diabetes, substance abuse, and depression. However, research indicated that supportive, responsive relationships with caring adults as early in life as possible can prevent or reverse the damaging effects of toxic stress response. The extent to which stressful events have lasting adverse effects is determined in part by the individual's biological response, the availability of supportive relationships that help moderate the stress response, and in part by the duration, intensity, timing, and context of the stressful experience.

Research suggests that the roots of impairment and underachievement in children are biologically embedded and are preventable. The biology of social class disparities," according to Dr. Shonkoff, "also early experiences are literally built into our bodies."

The American Academy of Pediatrics released the policy statement: "protecting young children from adversity is a promising, science-based strategy to address many of the most persistent and costly problems facing contemporary society, including limited educational achievement, diminished economic productivity, criminality, and disparities in health."

The most effective prevention is to reduce exposure of young children to extremely stressful conditions, such as recurrent abuse, chronic neglect, caregiver mental illness or substance abuse, and/or violence or repeated conflict. Programs or services can remediate the conditions or provide stable, buffering relationships with adult caregivers. Research shows that, even under stressful conditions, supportive, responsive relationships with caring adults early in life could prevent or reverse the damaging effects of toxic stress response on children.

There is need for creative thinking about how to apply unified scientific understanding of early childhood origins of health, learning, and behavior across multiple sectors of the society. Every system that touches the lives of children, (from mothers before and during pregnancy) could offer opportunities to leverage the rapidly growing knowledge base of early childhood development to strengthen foundations and capacities that make lifelong healthy development possible. In addition, policy investments in the early reduction of significant childhood "stress" could generate resilient returns for the child, the child's family and community from infancy to adulthood.

A balanced approach to emotional, social, cognitive, and language development can prepare children for success in school and later in the workplace. When developing biological systems are strengthened by positive early experiences, children are more likely to thrive and grow up to be healthy adults. Research has indicated that the most cost-effective opportunity to bring about change in children is not high school or even kindergarten— but in the early years of life, or even before birth.

Other References:

http://developingchild.harvard.edu/topics/understanding_intervention/
<http://developingchild.harvard.edu/resources/>
[8&q=august+6%2C+2007&sa=Search&siteurl=developingchild.harvard.edu%2Findex.php%2Fnews%2Fnewsletter_archive%2F&ref=developingchild.harvard.edu%2Fnews%2F](http://developingchild.harvard.edu/resources/newsletters/8&q=august+6%2C+2007&sa=Search&siteurl=developingchild.harvard.edu%2Findex.php%2Fnews%2Fnewsletter_archive%2F&ref=developingchild.harvard.edu%2Fnews%2F)
http://www.nccp.org/publications/pdf/text_398.pdf
http://developingchild.harvard.edu/index.php/resources/reports_and_working_papers/
<http://www.tn.gov/tccy/slc-areport11.pdf>
<http://developingchild.harvard.edu/index.php/activities/forum/>
http://developingchild.harvard.edu/search/?cx=001599101917928556767%3Acfzjkqwnv8&cof=FORID%3A9&ie=UTF-8&q=august+6%2C+2007&sa=Search&siteurl=developingchild.harvard.edu%2Findex.php%2Fnews%2Fnewsletter_archive%2F&ref=developingchild.harvard.edu%2Fnews%2F
http://developingchild.harvard.edu/resources/reports_and_working_papers/foundations-of-lifelong-health/
<http://developingchild.harvard.edu/resources/briefs/>
http://developingchild.harvard.edu/resources/articles_and_books/#AAP
<http://developingchild.harvard.edu/index.php/activities/council/>
[http://developingchild.harvard.edu/search/?cx=001599101917928556767%3Acfzjkqwnv8&cof=FORID%3A9&ie=UTF-](http://developingchild.harvard.edu/search/?cx=001599101917928556767%3Acfzjkqwnv8&cof=FORID%3A9&ie=UTF-8)
http://developingchild.harvard.edu/topics/science_of_early_childhood/toxic_stress_response/
<http://www.hsph.harvard.edu/forum/toxic-stress-of-early-childhood-adversity.cfm>
http://www.nytimes.com/2012/01/08/opinion/sunday/kristof-a-poverty-solution-that-starts-with-a-hug.html?_r=2
<http://www.tn.gov/tccy/kc.shtml>
<http://datacenter.kidscount.org/data/bystate/StateLanding.aspx?state=TN>

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