Stress is a fact of life for adults and children.

If asked to think of an example of someone affected by stress, most of us would probably imagine a college student studying all night for an exam or an employee scrambling to meet a deadline. Few of us are likely to think of a child listening to his parents argue in the next room, and even fewer would picture an infant being ignored by a mother suffering from depression.

Although we may not be accustomed to the idea, children are just as vulnerable to stress as adults are. Neglect, abuse, family poverty, and exposure to domestic violence are just a few of the potential sources of stress during infancy and early childhood. Chronic early stress has been linked to behavioral and emotional problems in childhood as well as mental and physical illness later in life.[1] A growing number of studies show that stress can result in changes in the structure and function of a child's brain.[2,3]

Toxic stress can alter and impair a child's brain.[4]

The word "stress" is often used informally to refer to feelings of anxiety or tension. But to understand the effects of stress, we need to understand its physical aspect. Stress is the body's alarm system. When a challenge or threat occurs, the brain sets off a series of changes throughout the body. These changes shift resources away from nonessential functions and toward short-term energy and stamina.[5]

This process helps us deal with difficult or dangerous situations. But when our stress alarm goes off too often or for too long, it can produce wear and tear on the body and disrupt the stress system's ability to switch on and off at appropriate times. This can have serious health consequences. Stress hormones like cortisol are powerful tools with multiple functions throughout the body, and when they are not well regulated, they can do widespread damage. Inappropriate levels of cortisol have been linked to high blood pressure, diabetes, rheumatoid arthritis, chronic fatigue syndrome, and depression.[6]

Stress endangers young children's brain development. Persistent stress—sometimes called toxic stress—can interfere with the formation of the connections and networks that support thinking and learning.[7] In extreme cases, it can result in permanent changes in the brain's size and structure.[2]

Children are affected by stress even before they are born.

Babies are affected by stress even in the protective environment of the womb. A mother's level of stress during pregnancy influences her baby's risk of premature birth, low birth weight, and other complications.[8]

Due to the rapid pace of prenatal development, overexposure to maternal cortisol can be especially damaging during this period. Excess levels of cortisol can disrupt early brain development by interfering with the creation of neurons and with the development of synapses in some brain regions.[9]

Exposure to elevated maternal cortisol predicts fussiness, negative behavior, and fearfulness in infancy. It also predicts long-term outcomes: Prenatal stress has been linked to cognitive delays, attention disorders, academic difficulties, and behavioral and emotional problems.[10,11]

Additionally, prenatal stress can undermine the healthy development of a baby's own stress system. Too much maternal cortisol impairs the development of stress-related areas of the brain, affecting a child's ability to cope with stress and adversity throughout life.[12]

Our knowledge about prenatal stress in Shelby County is incomplete.

An ongoing cohort study of Shelby County mothers[13] suggests that as many as 8 percent of pregnant mothers may experience levels of prenatal stress that place their babies at risk. In their third trimester, women in the study completed a six-item questionnaire measuring how much anxiety they had experienced in the previous week.

Despite some research showing that stress is higher among low-income mothers, African-American mothers, and mothers with low education,[14] this pattern was not reflected in the current study. For example, 9.5 percent of white mothers reported anxiety in the at-risk range, compared to 6.6 percent of African-American mothers. Moreover, 9.3 percent of mothers with family incomes between $25,000 and $35,000 were at risk, compared to only 6.5 percent of mothers with incomes from $5,000 to $10,000.

A closer look at the research literature reveals that differences in prenatal stress are more pronounced when long-term stress is considered. The snapshot measure provided by the short anxiety questionnaire may have been insufficient to capture group-level differences.

Also, many researchers question the usefulness of self-reported anxiety measures when they are not supplemented with more objective data.[15] Additional analyses are necessary for the study to provide an accurate picture of prenatal stress among Shelby County mothers.

Stress in the early years of life can have life-long effects.

Most of our knowledge about early childhood stress comes from studies of children with histories of neglect, abuse, or severe deprivation. The effects of these extreme forms of stress are well-documented. Extreme stress alters brain development, resulting in abnormal brain structure and functioning. Some regions of the brain have been found to be smaller in adults who experienced severe stress during childhood.[4]

In recent years, more common sources of child stress have been gaining attention from researchers. These include harsh parenting, exposure to domestic violence, and maternal depression. One group of researchers found that infants whose parents frequently used corporal punishment showed stronger cortisol reactions than other infants to a mild stressor. Similarly, infants with emotionally withdrawn mothers had higher baseline cortisol levels than other infants.[16]

Like prenatal stress, chronic stress in the first years of life programs a child's stress response system to be over-sensitive. By affecting stress-related brain areas, early adverse experiences can have long-term consequences for health and development.[17]

Positive parenting helps keep children safe from stress.

Positive parenting can protect children from the effects of stress. A healthy and secure relationship with parents and caregivers makes an infant feel protected and helps her feel safe in situations that would otherwise seem threatening. Sensitive caregiving allows infants and young children—even those exposed to prenatal stress—to develop healthy psychological and physical reactions to stress.[10,17]

By contrast, children whose parents who show little affection and sensitivity are at risk for cognitive and behavioral problems. Infants of insensitive or intrusive mothers, for instance, are typically more fearful and less engaged. They have also been found to show measurable differences in cortisol levels and brain function.[3]

Early experiences can create a cycle of stress.

The biological and behavioral effects of early chronic stress create a barrier to a child's success and happiness and shape the way that he or she will deal with stress throughout life. High levels of early stress can create a cycle of stress by programming a child's stress response system to perform ineffectively throughout life. In adulthood, this condition is likely to be passed on to the next generation through the effects of prenatal stress and less-than-optimal parenting.

Promoting high-quality caregiving, especially during the first years of life, can break this cycle by buffering children from the harmful effects of toxic stress. Responsive and consistent parenting counteracts early adversity and protects children's emotional, behavioral, and social development.[18]

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