



**Early Brain and
Child Development**
BUILDING BRAINS, FORGING FUTURES
A Program of the American Academy of Pediatrics

Early Brain
and Child
Development

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The Science

Translating dramatic advances in basic developmental science into clinical practice will not be easily accomplished. That said, translating this science into practice is also an unprecedented opportunity to positively influence life-course trajectories. The following figures summarize the interactions between experience, epigenetics, brain development and behavior, and how significant adversity and physiologic stress in childhood affect this on-going process. These figures are from *Helping Foster and Adoptive Families Cope with Trauma*.

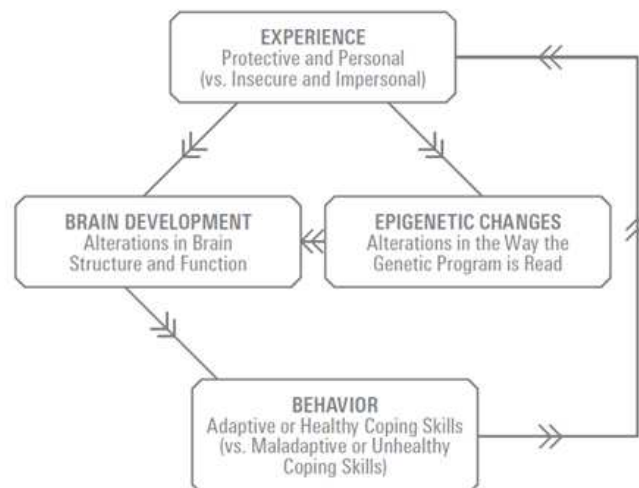


Figure 1

Development results from on-going and cumulative interactions between experience, biology, and behavior. If early childhood experiences are protective and personal, adaptive or healthy coping skills are more likely. If early experiences are insecure or impersonal, maladaptive or unhealthy coping skills are more likely.

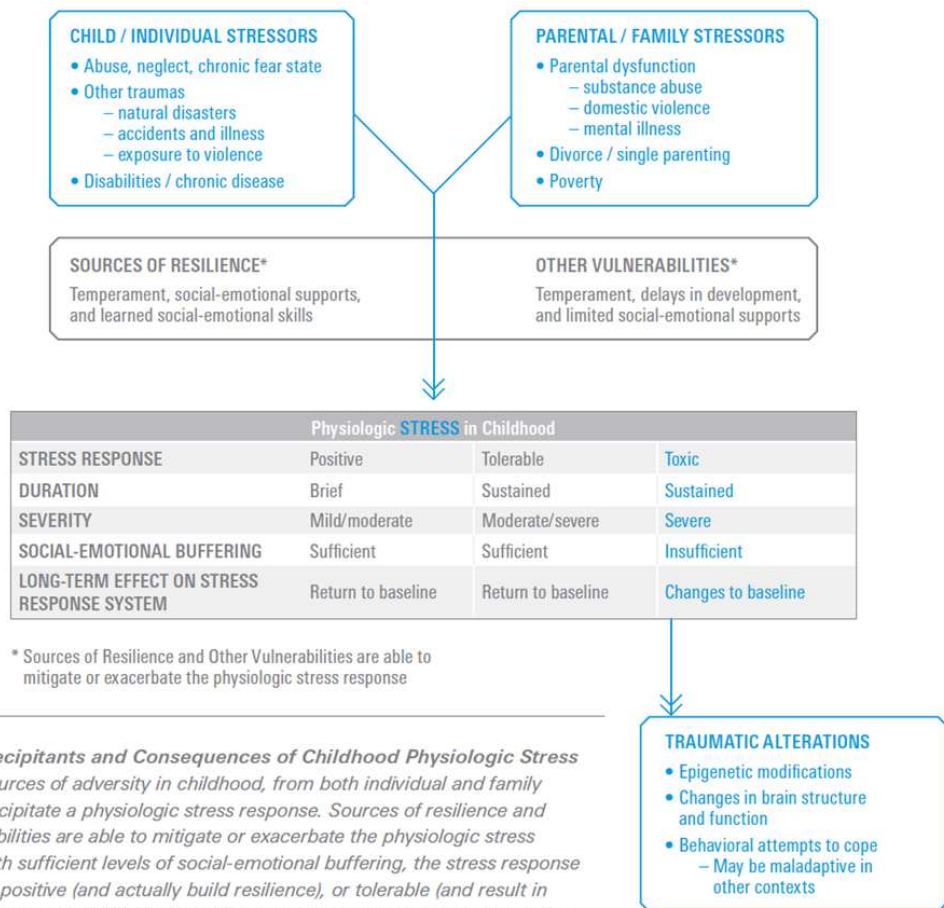


Figure 2. Precipitants and Consequences of Childhood Physiologic Stress
Significant sources of adversity in childhood, from both individual and family stressors, precipitate a physiologic stress response. Sources of resilience and other vulnerabilities are able to mitigate or exacerbate the physiologic stress response. With sufficient levels of social-emotional buffering, the stress response can be either positive (and actually build resilience), or tolerable (and result in no sustained changes). With insufficient levels of social-emotional buffering, the physiologic stress response is sustained or severe and becomes toxic, resulting in potentially permanent alterations to the epigenome, brain structure, and behavior. These traumatic alterations may actually be adaptive in threatening or hostile environments, but they are often maladaptive in other, less threatening contexts.

View **What it Means for Pediatricians** and **Key Tips**

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