

Behavioral Factors Emerge in Crib Death

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Research into the correlates and antecedents of the sudden infant death syndrome (SIDS), the leading cause of death in the first year of life of post-neonatal babies, is of rather recent origins. Until the 1960's, "crib death" was a residual diagnosis, usually attributed gratuitously, and for humanitarian reasons without autopsy, to pneumonia or pneumonitis. Eventually, parents insisted that it should not remain a diagnosis of ignorance. They wanted to know the true cause of their infants' deaths, and with the help of a few concerned pediatricians, succeeded in obtaining a federal investment in research.

The research mounted over the next 30 years explored numerous hypotheses, including apnea, cardiac irregularities, and brain function anomalies, and most of them proved to be either irrelevant or to carry small portions of the variance in statistical analyses. These explorations cannot be characterized as futile, as some have indeed led to advances in the understanding of the neurophysiology of infancy. Nonetheless, it has been a simple *behavioral intervention*, introduced in the early 1990s, that is now credited with reducing the crib death rate in the US by one-half; about three crib deaths per thousand surviving births were occurring 15 years ago, and today the rate is about 1.5/1,000.

The simple intervention is sometimes referred to as the "back to sleep" maneuver. Parents and health care personnel have been urged, by NIH and pediatric associations, to place their infants for sleeping on their backs. The presumption is that prone sleeping increases the likelihood of the baby succumbing to respiratory occlusion. Parental behavior modification reduces the probability of this occurring.

Just as this parent behavior has emerged important in understanding crib death, the behavior of the *infant* has also been given increased attention. Interestingly, two of the earliest studies to conclude that the *behavior of the baby* may be critical (Naeye, et al, 1976; Swift & Emery, 1973) were carried out by medical pathologists. One demonstrated that the defense against respiratory occlusion posed a more severe problem for vulnerable infants than for surviving infants, and the other discovered that the temperaments of babies who succumbed were different from their sibling survivors.

These studies are cited recently by Lipsitt (2003), whose theory of crib death (Lipsitt, 1979) was based upon *behavioral* insufficiencies that SIDS babies may have in navigating the critical period between two and five months of age. This is the time window when a significant change in brain function occurs, and when 90% of SIDS cases occur.

Accounting for the relative invulnerability of babies in the first two months of life, and after five months, is the significant transition that babies make during this period. At birth their behavior is largely sub-cortical and reflexive. (Most newborns, in the prone position, are capable of lifting their heads off the mattress and freeing themselves of respiratory occlusion.) Later, with maturation and experience, their behavior is increasingly cortically mediated and learned. Most human infants move seamlessly through this change. However, a small proportion of babies fall into jeopardy, as the fundamental reflexes wane and are not adequately supplanted by learned protective behaviors. Then, when challenged with respiratory occlusion, they are not able to engage independently in a practiced head-lifting, -turning, life-saving response. Thus, SIDS babies are regarded in this view as the victims of a life-threatening learning deficit.

Figures

CRIB DEATH RATES/YEAR

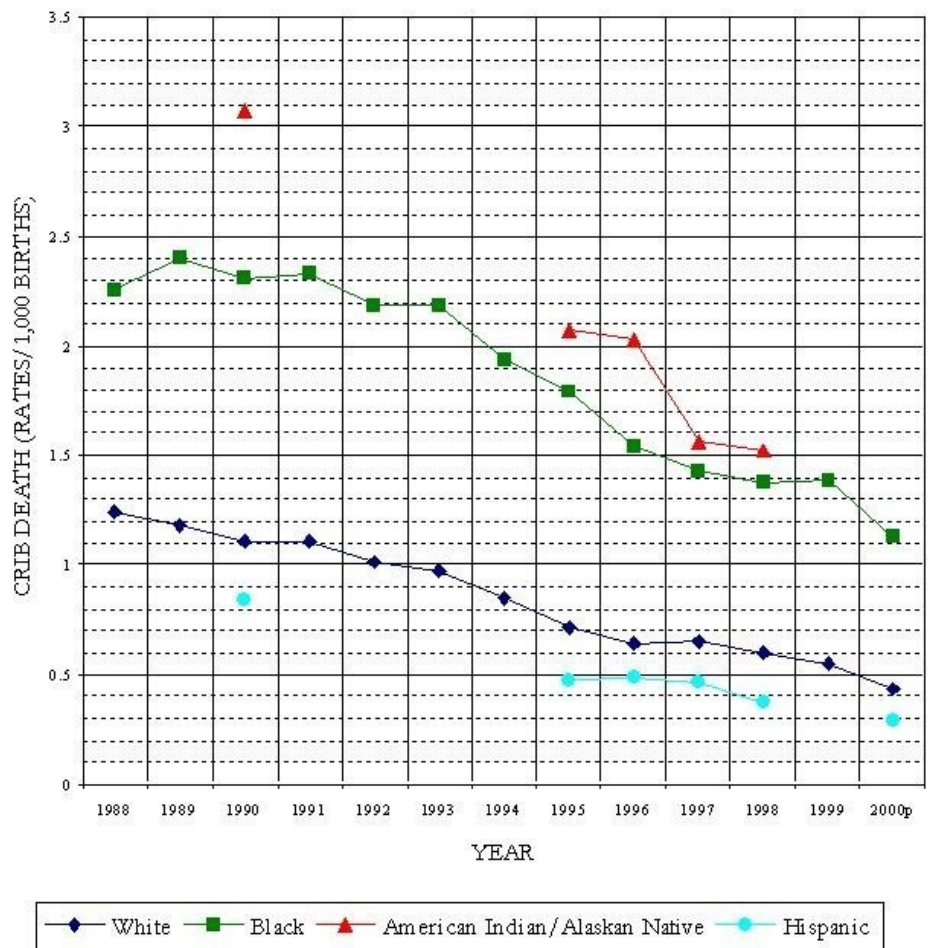


Figure 1. The incidence of SIDS in the US from 1988 through 2000. Note that black and native American babies are at greater risk than white or Hispanic babies, even as the incidence of SIDS has been reduced by half since the "back-to-sleep" caution was introduced.

Figure 2. McGraw's (1943) schematic of the developmental change in the swimming reflex from (a) reflexive, to (b) "disorganized" to (c) "voluntary, deliberate."

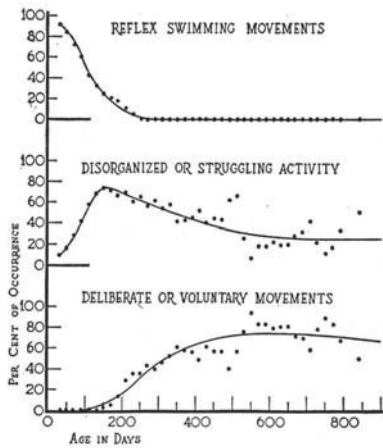


Figure 3. The developmental course of three types of behavior. Note that the peak of "disorganized" behavior occurs at about the age at which most SIDS cases occur.

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