Sudden infant Death Syndrome – Don´t Forget the Guardian Angels!

William-Adolphe Bouguereau

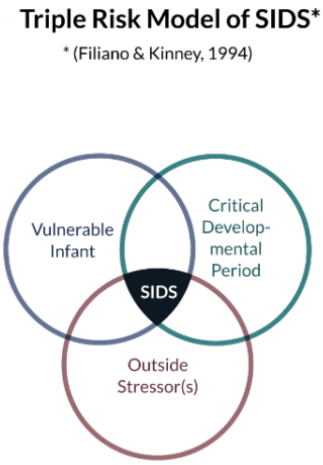
The sudden, unexpected and medically unexplained death of an infant during sleep (Sudden Infant Death Syndrome, SIDS) is one of the most horrific events imaginable. Nevertheless, SIDS remains scientifically enigmatic in many ways. We have just published a new approach to explaining it.

The triple risk model

The current explanatory model for SIDS is called the “Triple Risk Model” and goes like this: SIDS can happen when risk factors **from three levels come together:**

- **unfavorable environmental influences** (outside stressors), such as exposure to cigarette smoke, prone sleep position, sleeping with an intoxicated adult, heavy bedding, overheating, soft mattress, and so on.
- **unfavorable internal influences,** i.e. biological abnormalities in the infant itself, which are not fatal on their own, but which can make the infant vulnerable – such as genetic abnormalities or changes in the brainstem (for example, through maternal cigarette smoking during pregnancy).
- **unfavorable temporal influence.** This is derived from the observation that SIDS has a peak incidence between 2 and 4 months. It is therefore assumed that this time window represents a “critical developmental period”.

This risk-based model is currently the most well-established explanation for SIDS.



Triple risk model of SIDS, according to Filiano and Kinney.
In this explanatory model, SIDS is explained as the consequence of a fatal interaction of endogenous, exogenous and temporal risks.

The limitations of the risk-based model

Yet, there is a fundamental problem with the risk-based explanatory paradigm: the risks described are ubiquitous. Practically every baby can eventually slip into the prone position, sleep in a room that is too warm, be covered up incorrectly or encounter one of the other 20 or so external risk factors described in the literature. Indeed, the vast majority of babies are exposed to one or more of the risk factors described for SIDS on a daily basis. In a recently published analysis of pictures of sleeping babies posted on Instagram, for example, only 1.9% met the official recommendations for safe baby sleep. And every baby enters the "critical" developmental phase between 2 and 4 months at some point. And the internal risks? There is still no test for them, so they can never be completely ruled out. It is easy to conceive how this risk-based interpretation of SIDS may have contributed to the common notion among parents and health care providers that *SIDS can strike any infant, at any time.*

The "missing link"

At the same time, SIDS research clearly shows that risks alone are extremely poor predictors of SIDS. Over 99% of infants with certain risk factors will NOT die of SIDS. Take Germany as an example: Despite risks being present in the overwhelming majority of families, 692,910 of the approximately 693,000 babies born in 2023 (i.e. 99.98%) are apparently sufficiently protected against SIDS.

Of course, this does not mean that the risks do not count, that would be a misunderstanding. SIDS cases without at least one of the known risk factors are extremely rare, and these tragic events usually involve several risks at the same time. Clearly: the risks count!

Yet, they are an insufficient explanation for SIDS. The most exciting and as-of-yet unanswered question around SIDS may therefore extend beyond risks and touch on the question of resilience: **which factors provide babies with protection against SIDS? And why does it fail in a few of them?**

What makes babies resilient to SIDS?

The unsolved mysteries of SIDS research show how exciting the questions around resilience are:

- **There is the unresolved issue of the "grace period".** If one looks at the most common causes of infant deaths, they have one thing in common: they affect newborns much more frequently. In the case of SIDS, however, the pattern is different: infants are relatively rarely affected from SIDS in the first month of life. But why should a 3-month-old baby be more susceptible to the typical SIDS risks than a 3-week-old baby?
- **There is also the unresolved question of the protective effect of breastfeeding.** We now clearly know that

breastfeeding can partially protect babies from sudden infant death syndrome. But what can explain this protective effect and how does it come about?

- **And there is the unresolved question of the evolutionary rationale.** From an evolutionary biology perspective, SIDS is basically a nonsense event. Why would a healthy infant suddenly die after an extremely complex nine months of intrauterine development – without anyone being able to find a reason for it? Did Mother Nature really develop a human baby that could die just because its parents forgot to place it on its back for sleep?

Urgently sought: a new explanatory model

Obviously, the SIDS map still sports some blank spots. And as it appears they all relate to the question of resilience: Do risk factors perhaps only exert their power if they are not matched by sufficient protective ressources? Could SIDS perhaps ultimately reflect a dysbalance between adverse and protective influences? **And if so, what are the protective influences? Where and how do they develop?**

Over the last few years, I have been working with an interdisciplinary group of scientists on the issue of protection relevant to SIDS. By bringing together findings from evolutionary theory, comparative behavioural research and developmental paediatrics we developed a new explanatory model of SIDS which we call “evolutionary-developmental model of SIDS”.

Our paper (a comprehensive work of over 40 pages) has just been published with *Human Nature*.

You´ll find a brief summary here.

I will post more details and also some comments in the near future, on www.kinder-verstehen.de