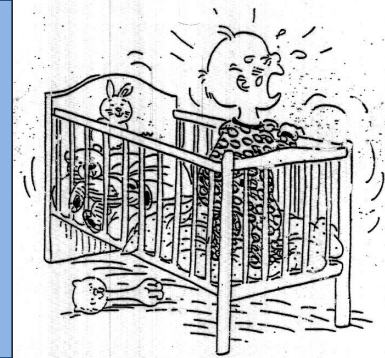


# Early Crying and Sleeping of Infants and their Consequences



**Dieter Wolke**

Department of Psychology (Faculty of Science) and Division of Mental Health and Wellbeing (Warwick Medical School)



# Disclosure Statement

- ▶ The author has documented that he has no financial relationships to disclose or Conflicts of Interest (COIs) to declare.



# Overview

- ▶ Crying and Sleeping
- ▶ Prevalence
- ▶ Consequences (What we know)
- ▶ Mechanisms
- ▶ Implications



# Early Developmental Tasks

- ▶ Early Communication for survival: **Fussing/Crying**



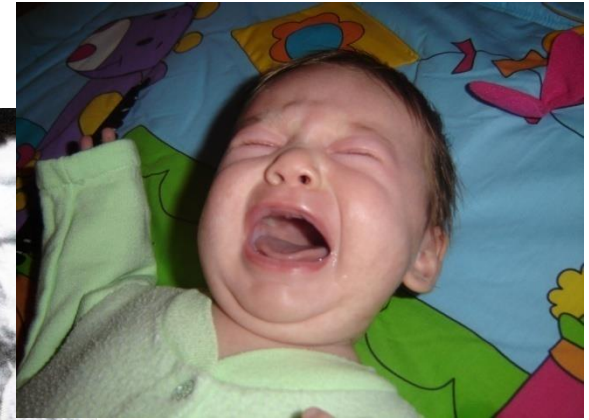
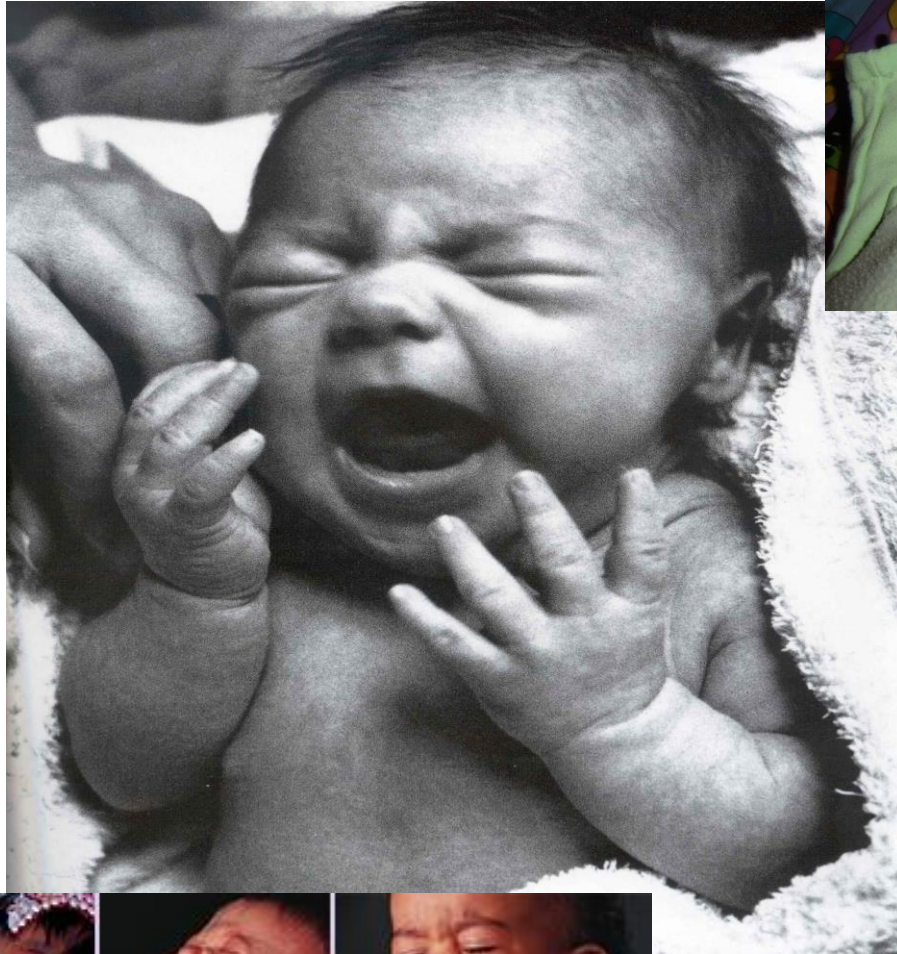
- ▶ Staying alive and grow your brain: **Sleeping**



- ▶ Nutrition intake for survival: **Feeding**



# Babies are very different from day 1



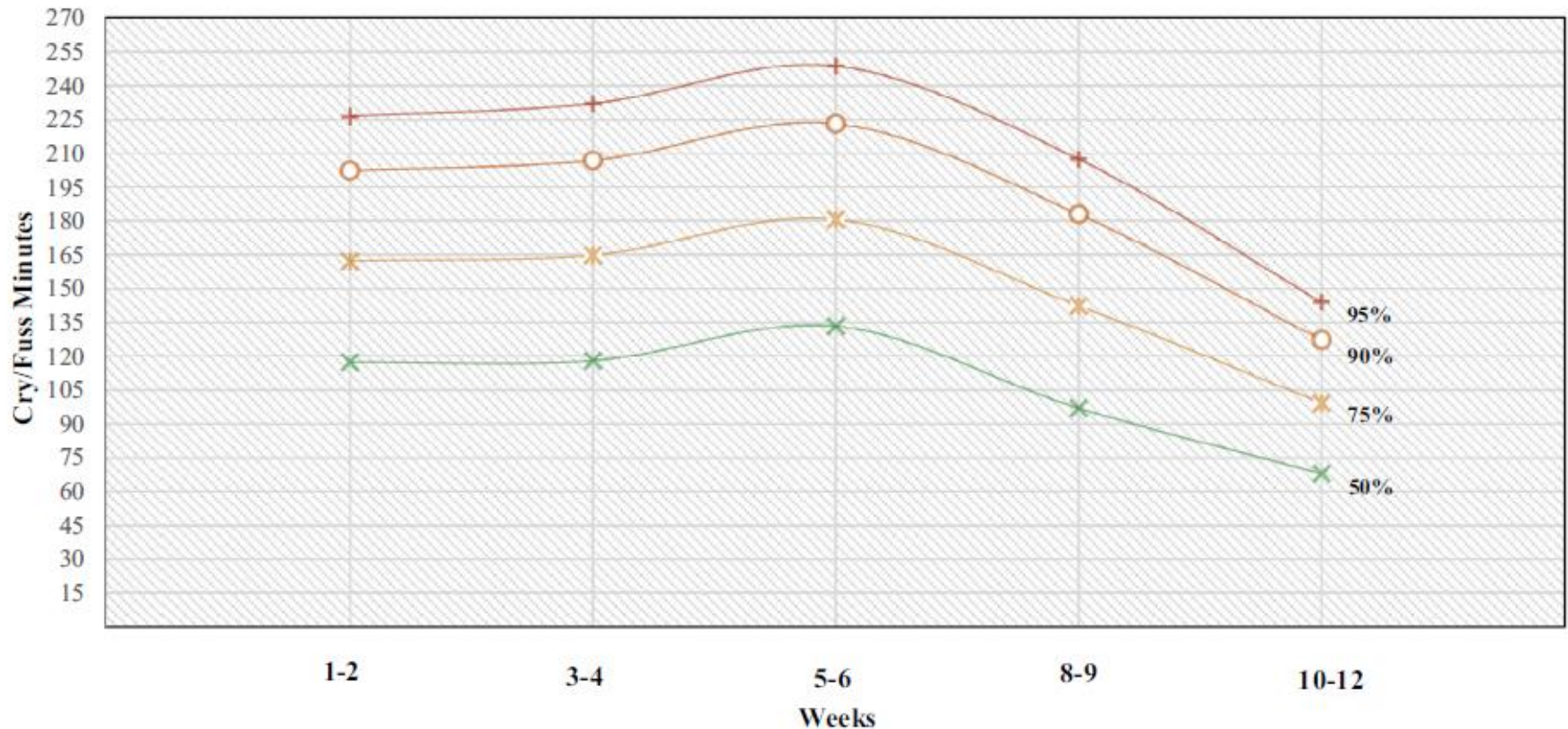


# Systematic Review and Meta-Analysis: Fussing and Crying Durations and Prevalence of Colic in Infants

Dieter Wolke, PhD, Dr rer nat h.c.<sup>1,2</sup>, Ayten Bilgin, MSc<sup>1</sup>, and Muthanna Samara, PhD<sup>3</sup>

THE JOURNAL OF PEDIATRICS

<http://dx.doi.org/10.1016/j.jpeds.2017.02.020>



**Figure 4.** Percentile chart of above average fuss/cry at the ages 1-2, 3-4, 5-6, 8-9, and 10-12 weeks in infants.

# Blub for Britain: we're just a nation of cry babies

By John von Radowitz

Babies cry more in Britain than almost anywhere else in the industrialised world, research has shown.

The UK was in the leading group in an international baby bawler survey conducted by scientists.

Researchers analysed data on almost 8,700 infants in different countries to find out how upset babies get in their first 12 weeks.

after birth. Bawling peaked at two hours, 15 minutes a day at six weeks, before gradually reducing to an average of one hour, 10 minutes.

Lead researcher Dieter Wolke, from the University of Warwick, who has compiled the first universal "crying chart" for children under three months, said: "Babies are already very different in how much they cry in the first weeks of life; there are large but normal variations.

## Les bébés qui pleurent le plus sont britanniques, canadiens et italiens

Par Stéphane Parent | [français@rcinet.ca](mailto:français@rcinet.ca)  
mardi 4 avril, 2017 , [Aucun commentaire](#) ↓

### Want the baby to stop crying? Be Danish. Don't breastfeed

Danish and Japanese babies cry least. Canada and Britain top the wailing league

□ Tue, Apr 4, 2017, 09:50 | Updated: Tue, Apr 4, 2017, 09:53



Jennifer O'Connell

[Follow @jenocconnell](#)

# MailOnline

## British children are the biggest cry babies in the world: Infants thought to bawl more because their parents are 'quicker to respond'

- Almost 30 per cent of British babies spend more than three hours crying a day
- Canadian babies are the most whingy according to the international survey
- Only 2.1 per cent of Japanese babies spend more than three hours crying a day
- German and Denmark babies are also among the quietest babies in the world

SALUTE & BENESSERE

### Italiani piagnoni: neonati stranieri sul podio

Ricerca inglese rivela che, nei primi tre mesi di vita, i nostri bambini sono terzi per pianto dietro proprio ai britannici e ai

BABYGESCHREI

### Nationale Unterschiede bei Babygeschrei liegen auch an Studienmethode

Wie viel Babygeschrei ist normal? Und in welchem Land schreiben Babys am meisten? Das haben Forscher nun genauer untersucht. Die Studie ist allerdings nicht unumstritten.

### Los bebés que más lloran del mundo son los británicos, les siguen los canadienses e italianos

Es la primera vez que se conocen estos datos y se han conseguido mediante la creación de una tabla de llanto normal durante los primeros tres meses de vida



# N-shaped curve in caloric intake

Daily Calorie Intake By Normal Infant

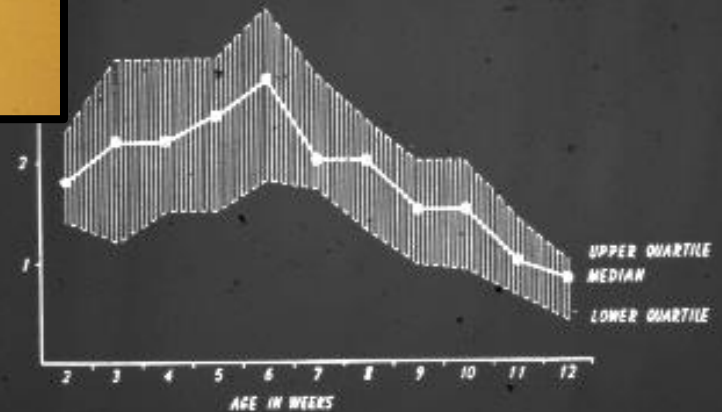
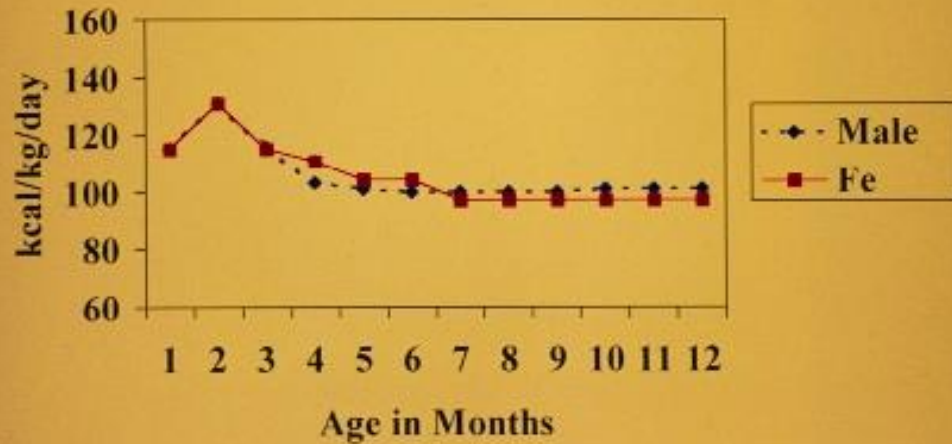
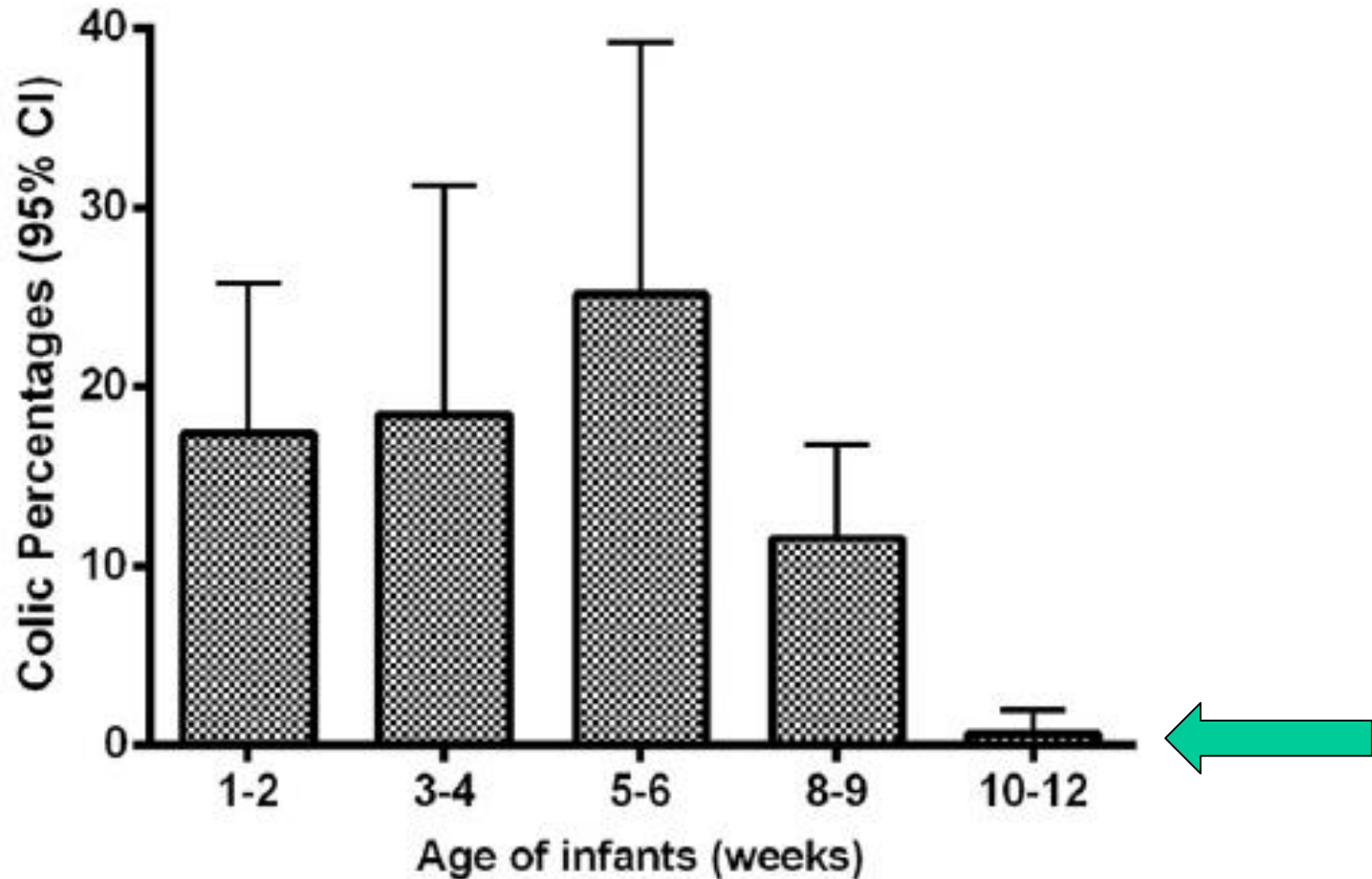


FIG. 2. Summary of the total crying time of the 80 infants studied.



# Colic Crying: > 3 hours; >3 days a week

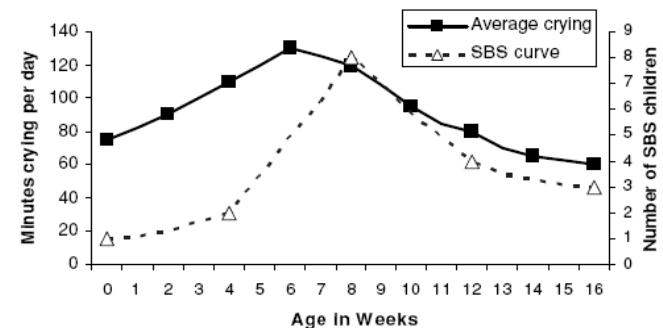


# Outcome of “colic” in Infants

(Lehtonen, Gormally and Barr, 2000)

▶ Wt. Gain	Transient/higher
▶ Allergy	None
▶ Crying	Much reduced
▶ Behavior disturbances	None
▶ Temperament difficult	None
▶ Sleep problems	None

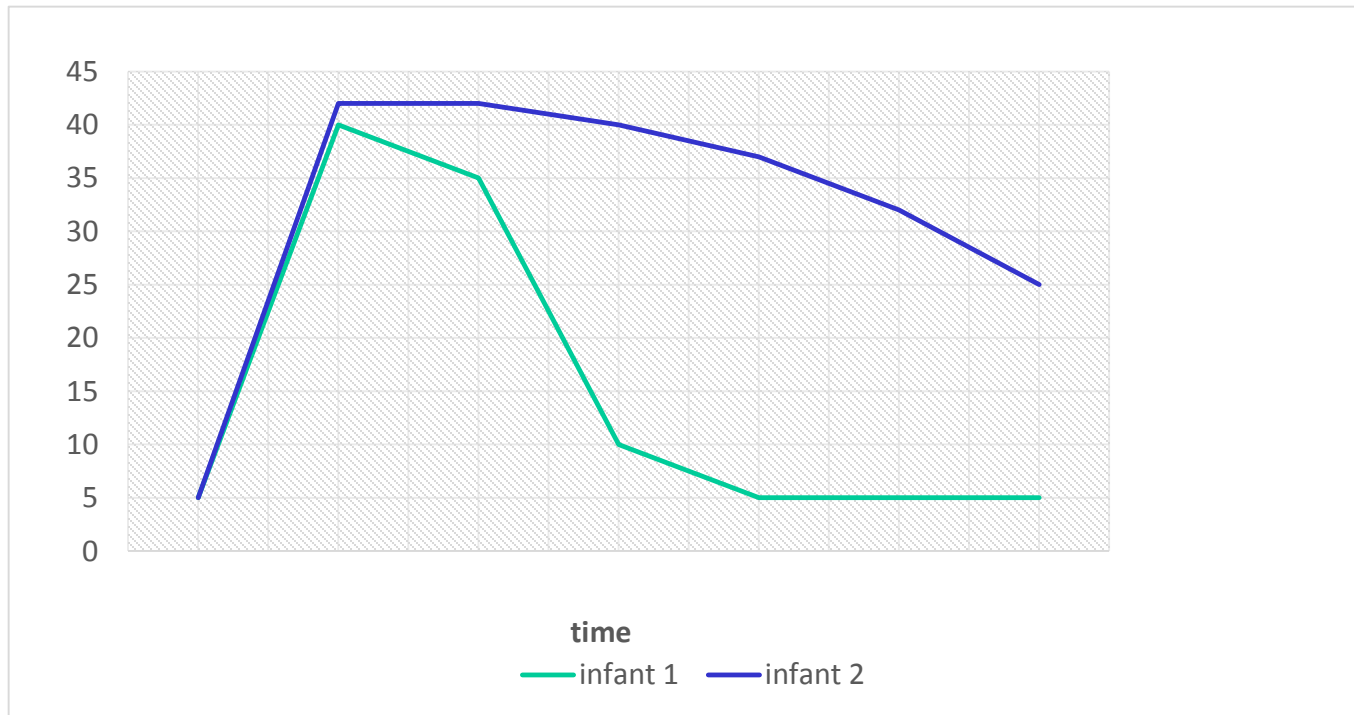
**BUT: Abusive Head Trauma  
Maternal Depression**



# Fussing/Crying – When a Regulation Problem?

- **Fussing/Crying** > 2 hours > 3 months of age

Regulation: Time to regulate back to initial behaviour



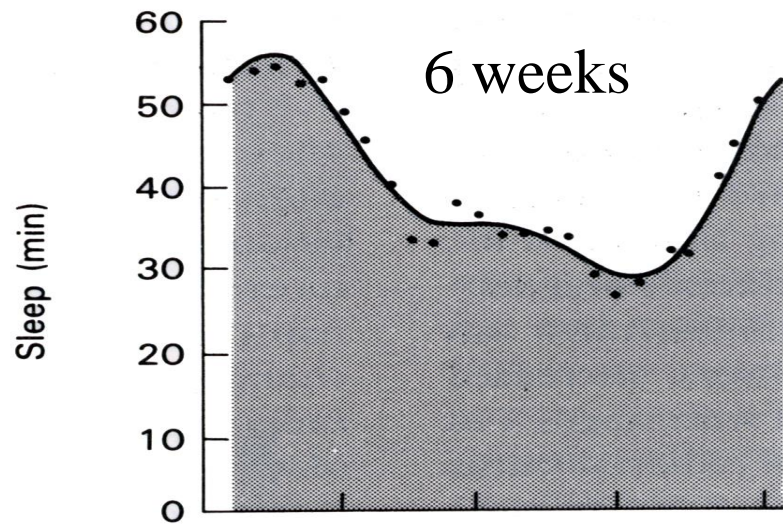
# Sleep Phenomenology

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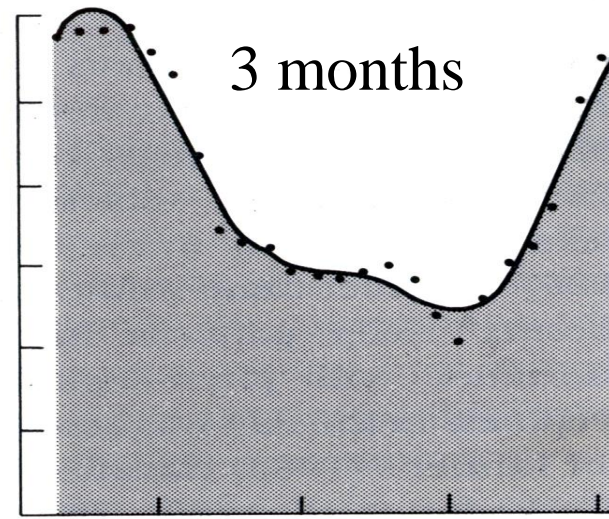
- **Newborn: Sleep periods of 2 to 4 hours equally distributed across the day (multiphasic)**
- **Between 2-4 weeks of age sleeping becomes more regular.**
- **When the infant starts sleeping through the night varies widely (some in the first 6 weeks – others not until 6 months).**
- **At the end of the 3rd month of life 70% of children sleep regularly through the night, i.e.. 0-6 am in one piece.**



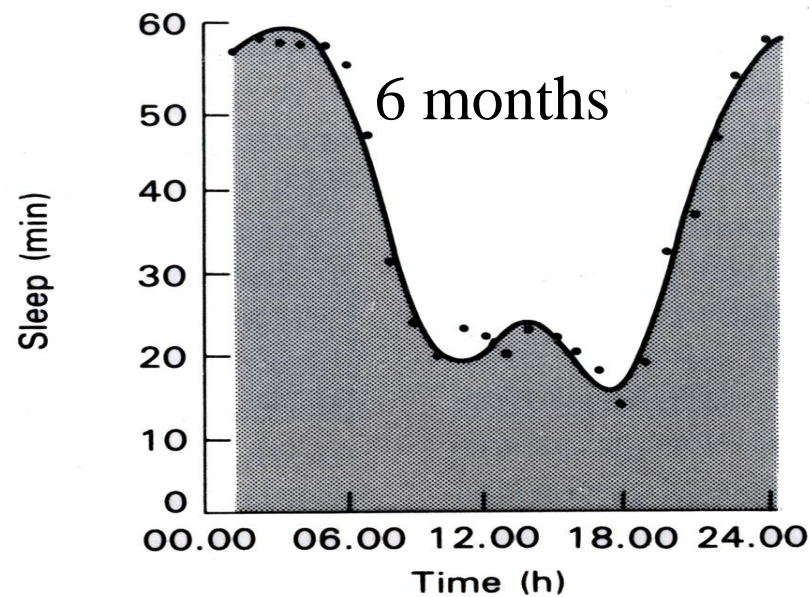
# *Sleeping and Feeding*



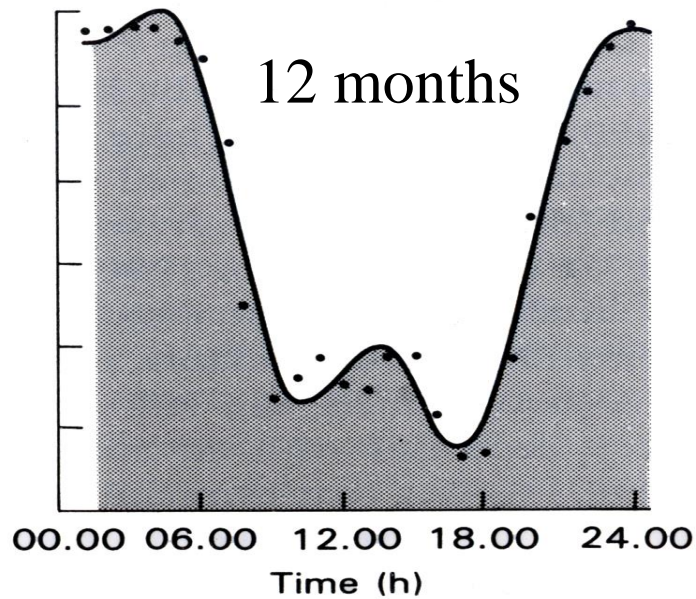
(a)



(b)



(c)



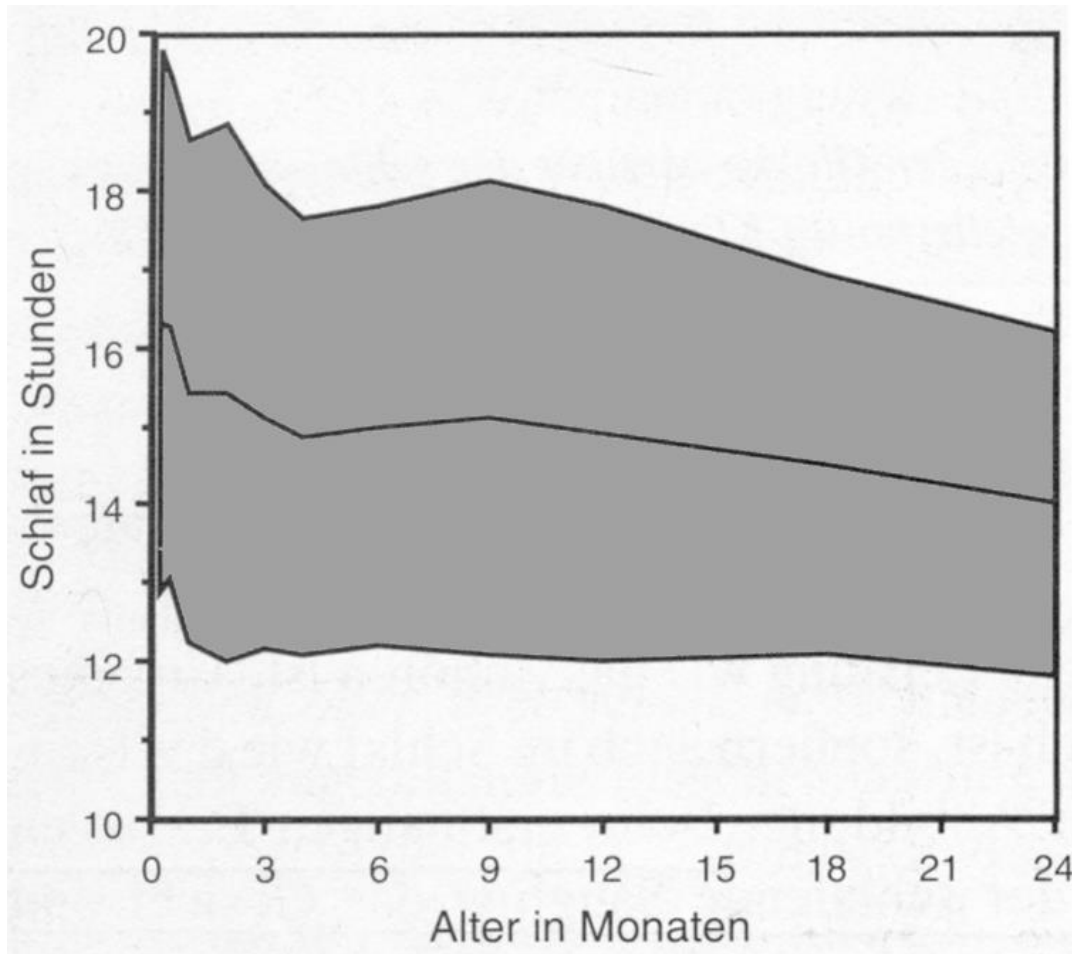
(d)

Bamford et al. 1990



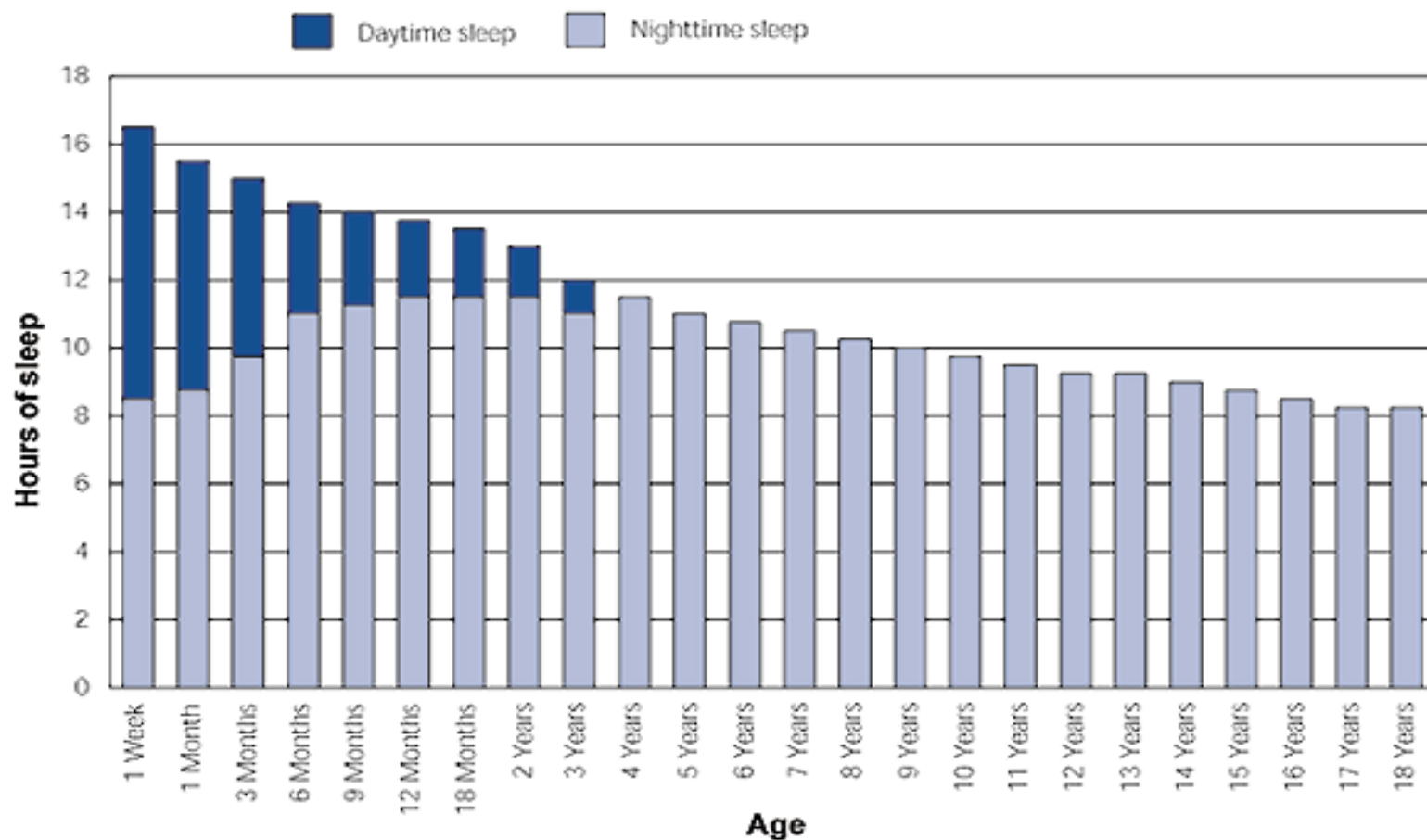


# Variability of sleep duration of infants/toddlers



Die graue Fläche gibt die Streubreite der Gesamtschlafdauer (Tag- und Nachtschlaf zusammengerechnet) an, die Linie in der Mitte die durchschnittliche Schlafdauer.

# Sleep Duration during Childhood



# Sleep Development

## Physiological

- at 6-8 months comparable to adult  
(still further differentiation of NREM sleep)

## Phenomenology

- up to 3-4 years multiple sleep phases  
(afternoon nap)
- clear day-night cycle from early weeks



# Important Principles

- **Babies are not born with the ability to sleep through the night**
- **All babies wake up at night**
- **Babies differ in their ability to re-settle after waking at night\***
- **Infants have to learn to sleep through the night**

---

\* St James-Roberts, I., Roberts, M., Hovish, K., & Owen, C. (2015). Video Evidence That London Infants Can Resettle Themselves Back to Sleep After Waking in the Night, as well as Sleep for Long Periods, by 3 Months of Age. *Journal of Developmental & Behavioral Pediatrics*, 36(5), 324-329. doi:10.1097/dbp.000000000000166

# How to soothe yourself at night





# Sleeping: A regulatory Problem

## Sleep onset problems (from 7 mths):

**(DC 0-3: 12 months or older)**

- **> 1 hr to fall asleep at night**
  - **> 30 mins to fall asleep with parent present**
  - **at least 4 weeks duration**
  - **5 to 7 episodes per week**
- (In addition to normal bedtime rituals)**



# Sleeping: A regulatory Problem

## Sleep maintenance (from 7 months) (DC: 0-3R: 12 months)

- Waking on 5 or more nights (0-6 am) per week that require parental intervention
  - once per night (minor)
  - several times (severe)



# Sleep Regulation: perceived as a Problem?

**Dependent on:**

- **Age of child**
- **Expectations of parents**
- **Society norms**

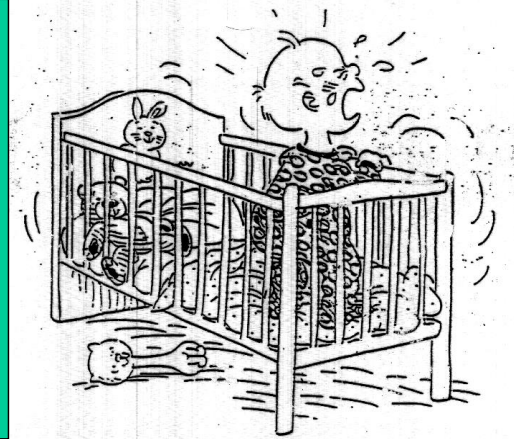


# Integration: Crying, Sleeping and Feeding

- **CRYING:** only means to signal to caretaker for closeness, protection and feeding
- **Sleeping:** Multi-phasic;  $\frac{1}{3}$ - $\frac{1}{2}$  of waking time feeding; double weight by 3-6 months; triple weight by end 1<sup>st</sup> year
- **Feeding:** high growth rate due to high food intake



# Core concept: reduced inhibition– Low “Self-Regulation”



When problems in regulating back continue beyond the normal period of adaptation

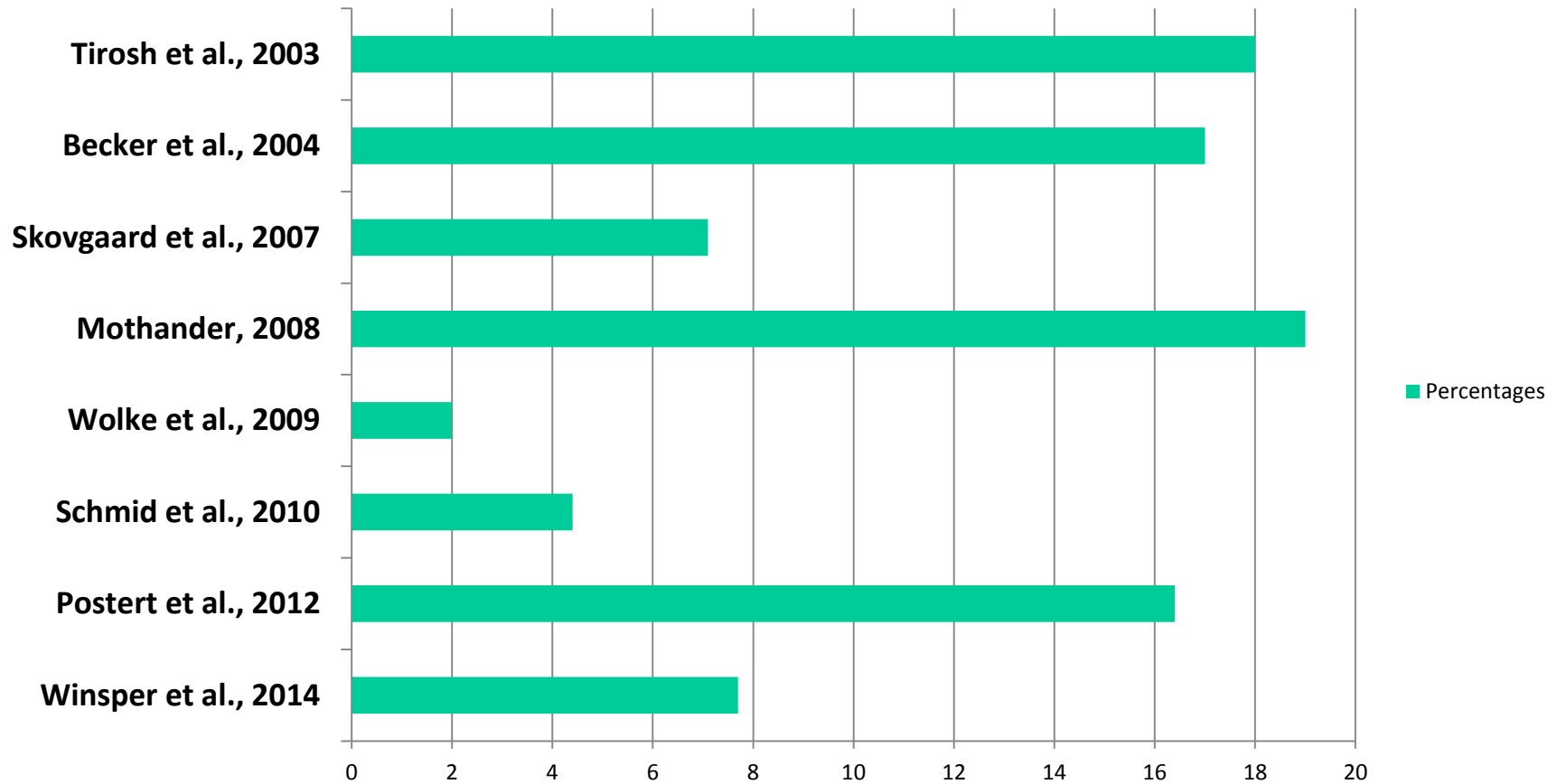
- ▶ **Fuss/cry**: cannot stop crying (> 3 months)
- ▶ **Sleeping**: cannot fall asleep alone or soothe alone when wake at night (> 6 months)
- ▶ **Feeding**: overcome neophobia (food refusal)

Individual Differences in the regulation of behaviour



# Prevalence: one problem rarely occurs alone

## Multiple Regulatory Problems



# Does it matter: Long term Consequences?

---



Holtmann et al., 2011; Althoff et al., 2010

# Associations between problems with crying, sleeping and/or feeding in infancy and long-term behavioural outcomes in childhood: a meta-analysis

Mirja Helen Hemmi,<sup>1</sup> Dieter Wolke,<sup>2</sup> Silvia Schneider<sup>3</sup>

*Arch Dis Child* 2011;**96**:622–629. doi:10.1136/adc.2010.191312

- ▶ **Children with regulatory problems in infancy have more often behavior problems in childhood**
- **Cumulative effects of RPs:** Multiple RP show stronger associations with behavior outcomes in childhood than single RP (*e.g. Wolke et al. 1995; von Kries et al., 2006*)
- ▶ **Strongest associations between RP & behavior problems for:**  
*clinically referred samples*

*multiple problem families (e.g. Becker et al., 2004)*

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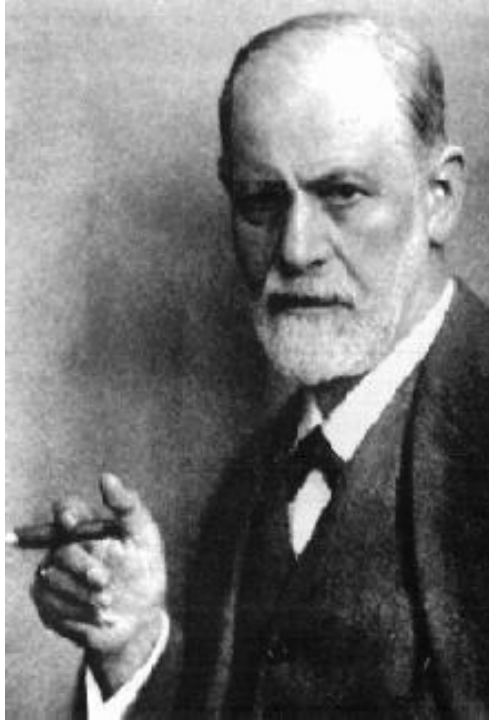
# Conclusions

- ▶ Our results add to the evidence that infants who show multiple RP are at increased risk for attention problems – these findings uniquely add that they are still present in adulthood.
- ▶ Our results highlight the need to closely monitor infants who show persistent RP in the first few years of life.



# Mechanisms

Is it Nature or is it all the parents fault? The  
Psychoanalysts



Sigmund Freud



Alfred Adler





A black and white portrait of Philip Larkin, an older man with glasses, wearing a suit and tie. The text is overlaid on the image.

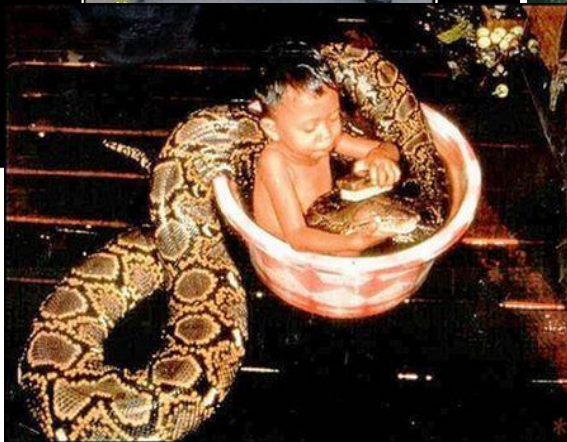
**Philip Larkin  
(1922-1985)**

**"This Be The Verse"**

**Written around April 1971, first published in the  
August 1971 issue of New Humanist**

# We are aware of bad parenting...

UN Convention on  
the Rights of the Child



**PARENTING**  
Not quite everyone's cup of tea

# PARENTING - Misconceptions

- ▶ **Erroneous conclusions from clinical studies**
- ▶ **The Headache Problem**



# **Infant RPs or Parenting? Early Crying & Sleeping Problems and Attachment at 18 Months**

**(under review)**

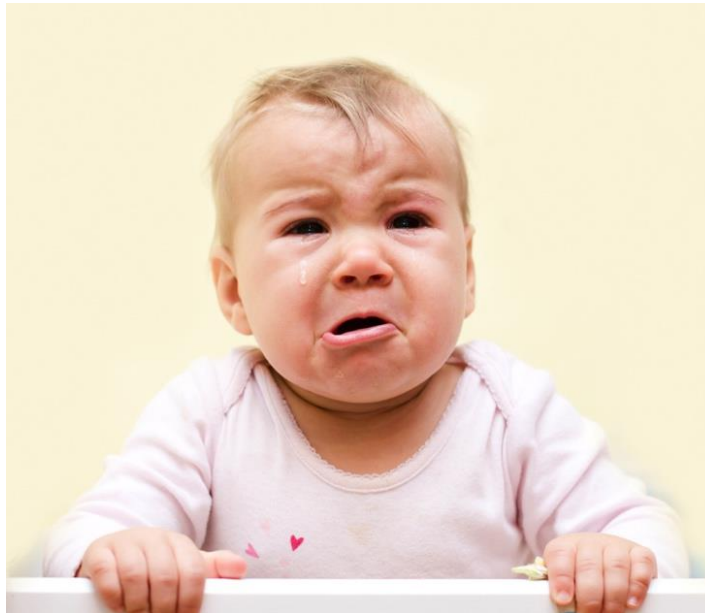
**Ayten Bilgin<sup>a</sup> & Dieter Wolke<sup>a, b</sup>**

<sup>a</sup> Department of Psychology, University of Warwick;

<sup>b</sup> Division of Mental Health and Wellbeing, University of Warwick

# Research Question

**What is the association between early multiple regulatory problems (crying & sleeping) and attachment at 18 months?**



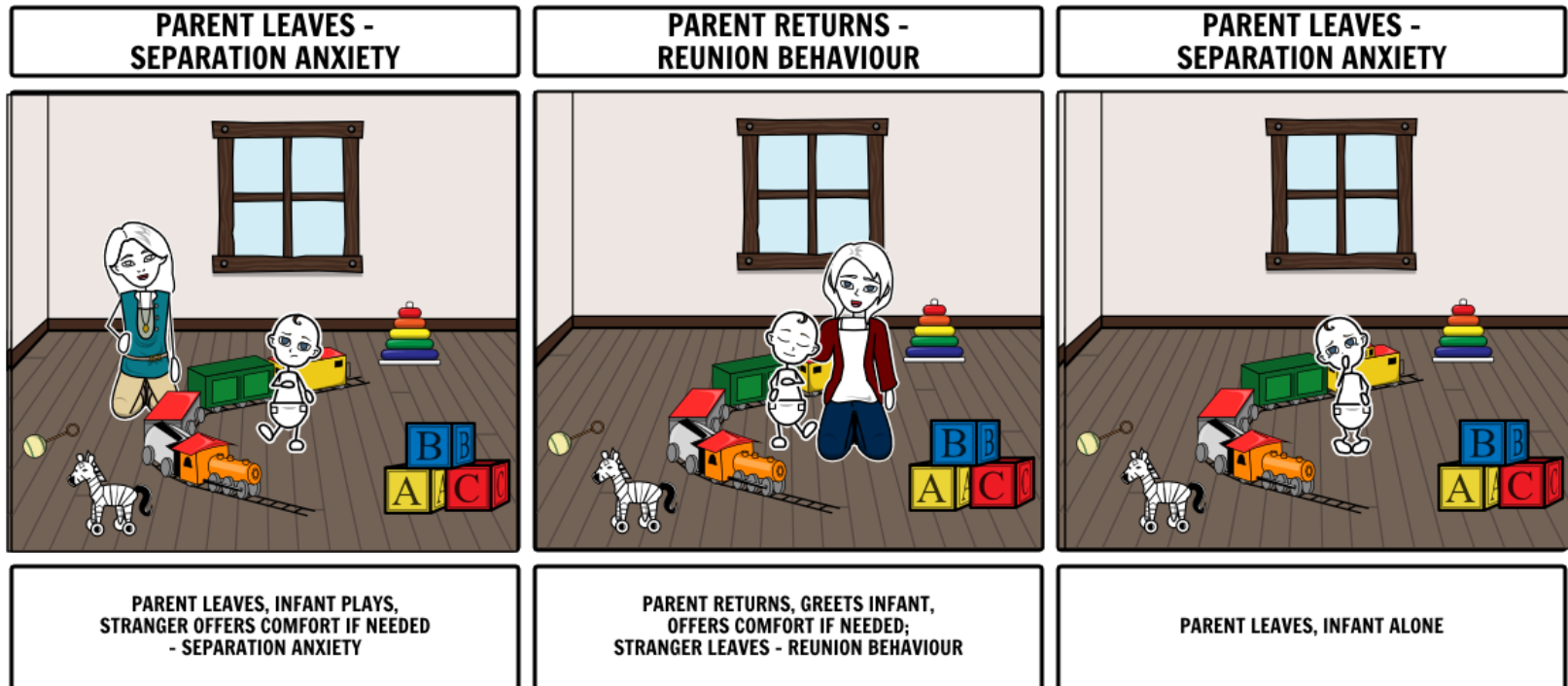
# Design and Sample

- ▶ Prospective longitudinal study of full-term infants during the first 18 months.
- ▶ Infants and their caretakers were assessed at term, 3, 6 months and 18 months.
- ▶ Final sample with complete longitudinal data: 105 infants and their caretakers (to have just healthy babies).





# Outcome: Ainsworth Strange Situation



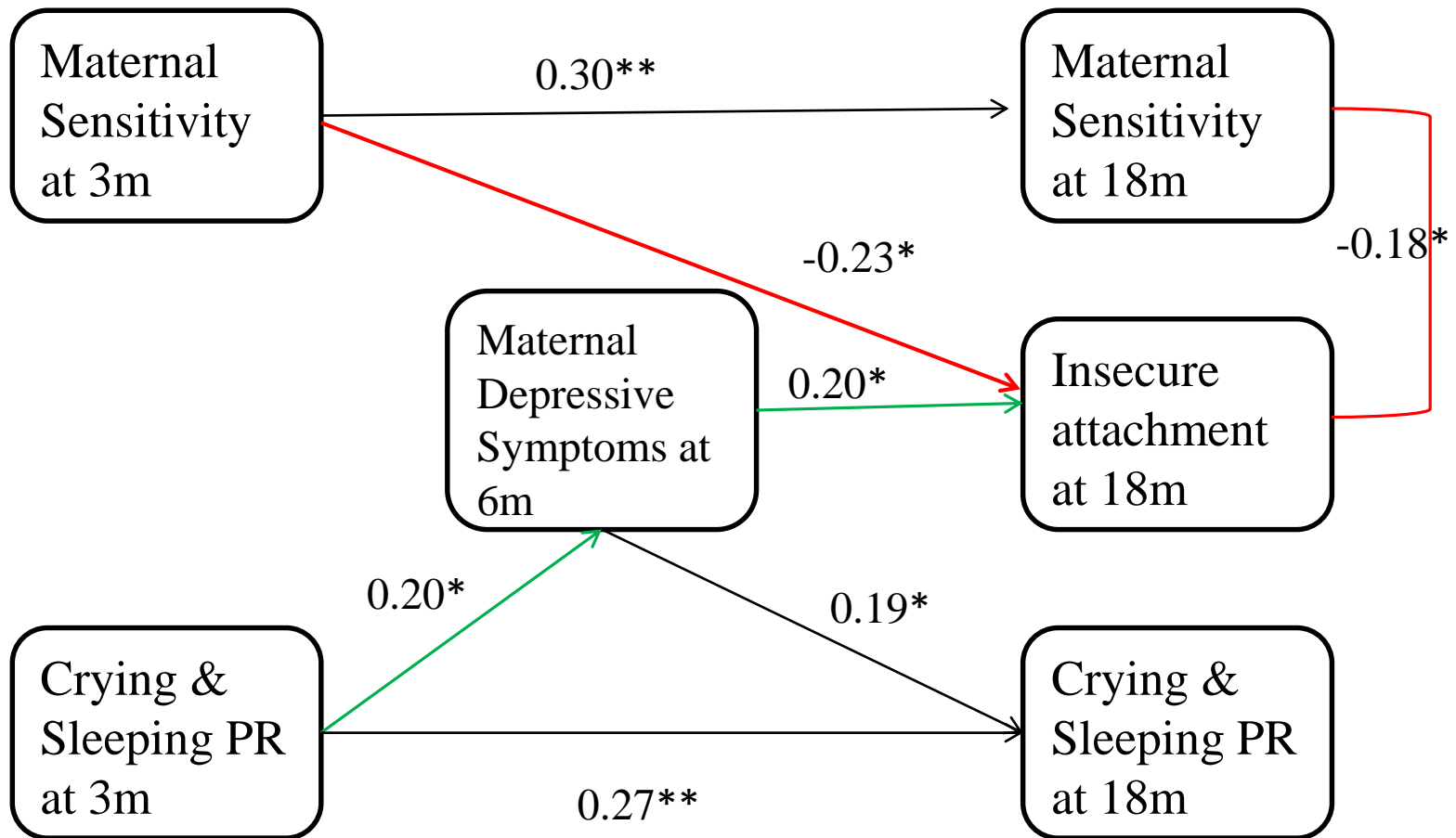
Create your own at Storyboard That

# Measures Outcome

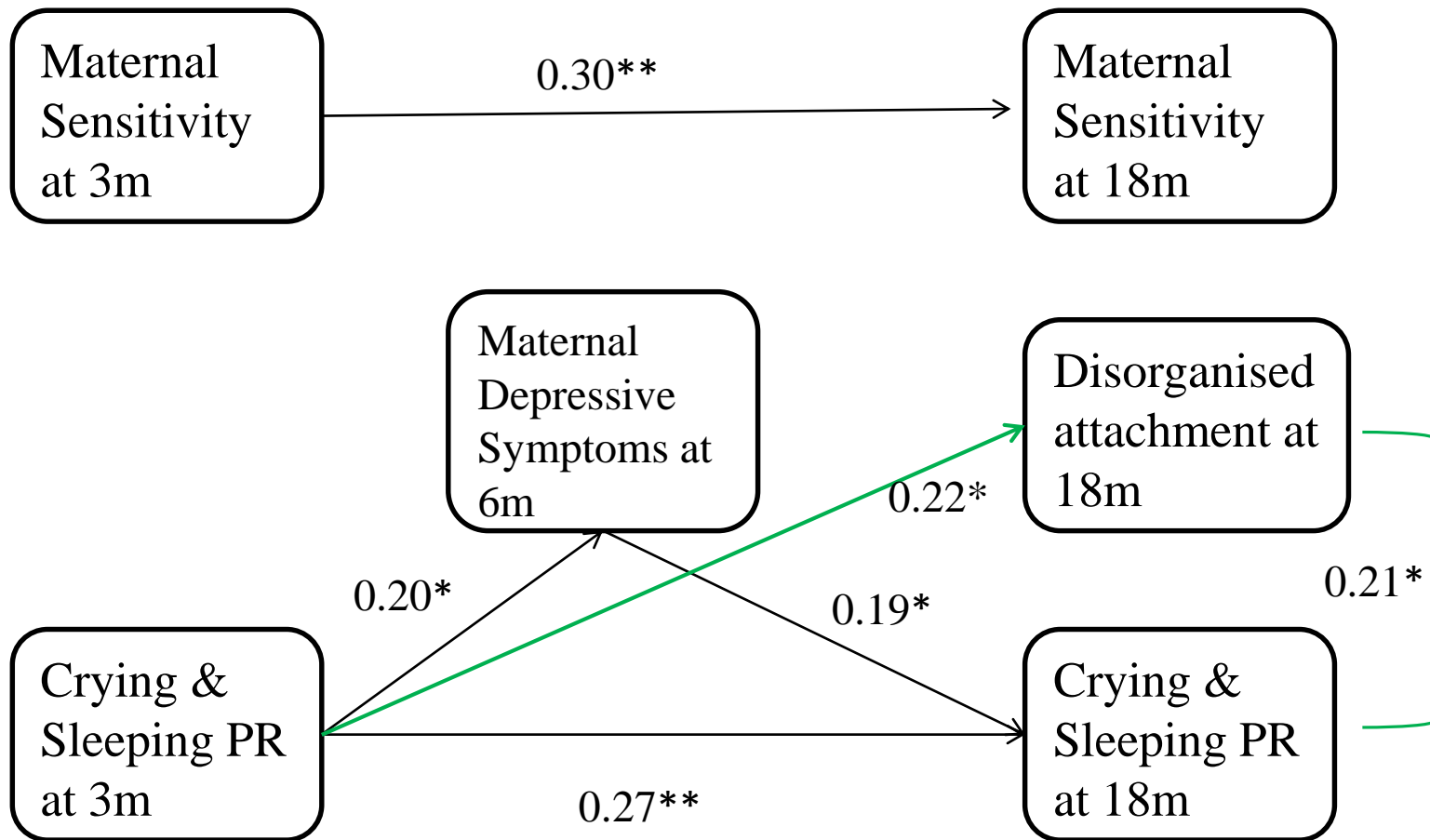
- ▶ 1. Insecure      2. Disorganised Attachment      at 18 Months
- ▶ **Strange Situation Procedure**
- ▶ Experimenters were trained by Dr. Elizabeth Carlson and all tapes were sent and coded at the Institute of Child Development, University of Minnesota
- ▶ **Insecure attachment:** Consistent organised strategy in the Strange situation in dealing with separation and reunion with major caretaker. Two types: ambivalent/resistant vs. avoidant
- ▶ **Disorganised Attachment:** not having an organised strategy dealing with separation and reunions – behavioural indicators
- ▶ Good inter-rater reliability ( $\kappa=0.76$ ).



# What is the association between early multiple regulatory problems and **insecure attachment** at 18 months?



# What is the association between early multiple regulatory problems and **disorganised attachment** at 18 months?



# Summary of Findings

- ▶ **Crying & Sleeping Problems and Insecure Attachment at 18 Months:**
  - Crying & Sleeping problems at 3 months were **not** significantly associated with insecure attachment at 18 months
  - Maternal Sensitivity was the significant predictor
- ▶ **Crying & Sleeping Problems and Disorganised Attachment at 18 Months:**
  - Crying & Sleeping problems at 3 months **were significantly** associated with increased disorganised attachment at 18 months; sensitive parenting had no bearing on disorganised attachment

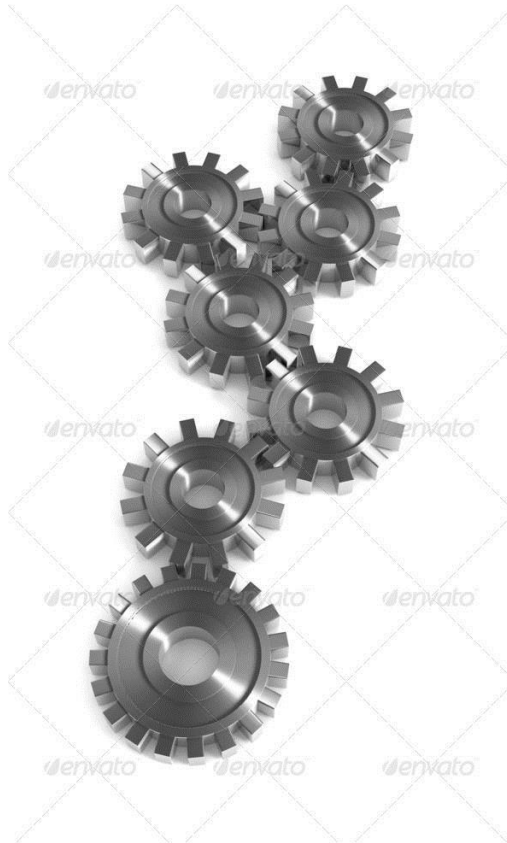


# Implications

- ▶ Crying & sleeping PR are predictors of disorganised attachment
- ▶ Crying & sleeping PR are associated with problems of regulating separations and reunions, i.e. are disorganised. Multiple regulatory problems may put infants at risk for relationship problems.
- ▶ **Cascade model of Dysregulation**
- ▶ MRP → Disorganised Attachment → Dysregulation trajectory  
-----Externalizing Problems

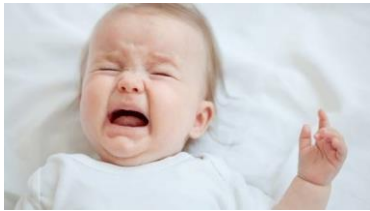


# The Cascade Model – getting a few degrees off course



Bornstein, M. H., Hahn, C. S., Bell, C., Haynes, O. M., Slater, A., Golding, J., . Wolke, D (2006). Stability in cognition across early childhood - A developmental cascade. *Psychological Science*, 17(2), 151-158.

# Cascade Model: Regulatory problems lead to childhood dysregulation and in turn to Psychiatric Problems



**Multiple  
Regulatory  
Problems:**  
*crying; sleeping;  
feeding*



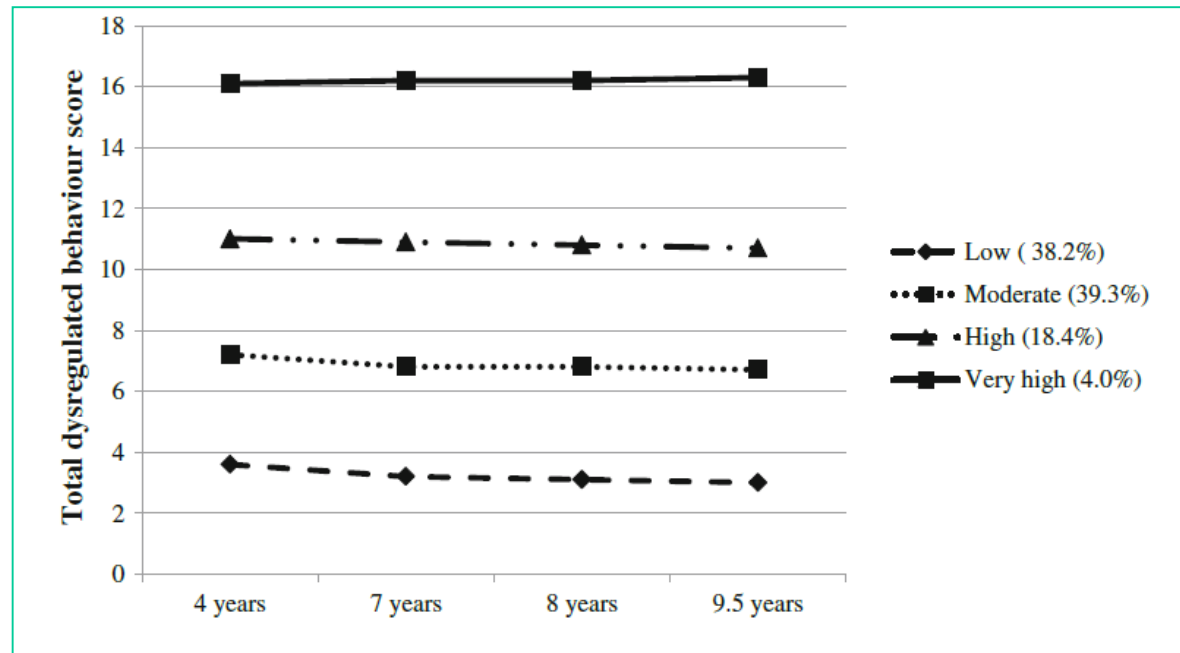
**Childhood  
dysregulation  
phenotype**

*(Holtmann et al., 2011;  
Bianchi et al., 2016)*



# Childhood Dysregulation Trajectories

(emotionality, conduct problems, and hyperactivity)



**Latent Class Growth Analysis**

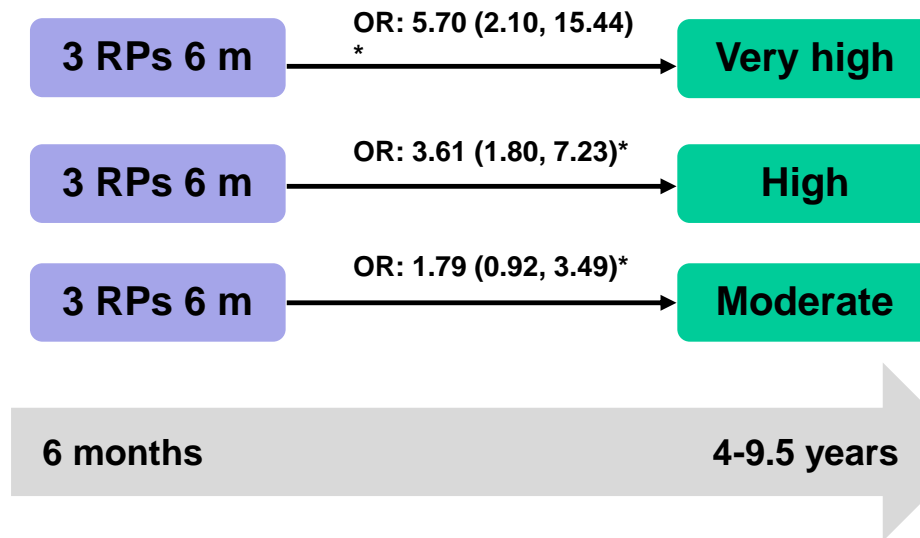
*\*After adjusting for sex, family adversity, low birthweight; n = 10, 630*



# Three Regulatory problems & dysregulation

Multiple regulatory problems

Childhood dysregulation



A clear dose-response relationship

\*After adjusting for sex, family adversity, low birthweight;  $n = 10,630$

Winsper, C., & Wolke, D. (2014). Infant and toddler crying, sleeping and feeding problems and trajectories of dysregulated behaviour across childhood *Journal of Abnormal Child Psychology*, 42, 831-843.

- ▶ Multiple regulatory problems put children on a trajectory of dysregulation
- ▶ Does this deviation from the “normal” course lead to adolescent psychiatric problems?



# Implications: Clinical



Early treatment of MRPs **may reduce risk** of continued dysregulated behaviour and thus long-term psychopathology

# Questions?

